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The four 1982 numbers of the Journal of the Society for Accelerative Learning and Teaching (SALT) include articles on: a comparison of the Tomatis Method and Suggestopedia; the CLC system of accelerated learning; Suggestopedia in the English-as-a-second-language classroom; experiments with SALT techniques; accelerative learning techniques for self-concept enhancement; Suggestopedic German in Australia; suggestion for harmonizing with barriers; music and vocabulary learning; relaxation training and music for creativity; calculators and microcomputers for exceptional children; a process for emergency-shelter children; SALT techniques for vocabulary tutoring for the Scholastic Aptitude Test; relaxation training in Swedish schools; the changing personal history technique; language and the brain; relaxation in a college management class; group relaxation and spelling; a simplified body/mind model; supermemory of numbers; fantasy journeys and creativity; mathematics instruction for gifted students; inner modeling; Suggestopedia and the Silent Way; baroque music and imagery for vocabulary retention; and book reviews. (MSE)

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# THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

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# THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

## Guidelines for Contributors

The Editor welcomes submission of manuscripts on an interdisciplinary nature relevant to all aspects of suggestive learning-teaching-therapy counseling within the theoretical and procedural confines of Suggestology and/or Suggestopedia. The JOURNAL FOR THE SOCIETY OF ACCELERATIVE LEARNING AND TEACHING will publish a wide variety of articles - including critical reviews, theoretical analyses, speculative papers, case studies, quasi-experimental studies, as well as reports of empirical research (basic or applied) of major significance. The basic focus is Suggestopedia theory, research and application.

MANUSCRIPTS should be typed on one side of standard (8 1/2 x 11 non-corrosible) bond typewriter paper, clearly mimeographed or multilithed. Do not use ditto. The original and three copies (carbon or dry electrostatic copies) should be submitted. Authors should also keep a personal copy to check against proofs. All material must be double-spaced, with ample margins (1 1/4 in. on each side and 1 1/4 in. on top and bottom). Any paper should not be longer than 30 typewritten pages, excluding bibliography, footnotes, tables, figures, etc. In special cases, longer papers may be submitted for publication.

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# THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

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## **The Tomatis Method and Suggestopedia: A Comparative Study**

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### **Abstract**

Developed in Bulgaria in the 1960's by Dr. Georgi Lozanov, Suggestopedia is a unique system of foreign language teaching, combining yoga relaxation and verbal suggestion with the direct method. In the 1950's in France, Dr. Alfred Tomatis began his research into the ear and the voice, and subsequently developed his own unique system for treating dyslexia and teaching foreign languages. Both Lozanov and Tomatis are medical doctors, therapists and researchers who have been influenced by yoga. Both emphasize the teacher's authority, the pact of confidence between teacher and student, and the role of the physical and social environment. Both stress the importance of intonation or tone of voice as well as rhythmic presentation of material.

Both the Tomatis and Lozanov Methods favor the use of baroque or classical violin music and emphasize the training of the ear and the development of memory through listening and repetition. Comprising an active and a passive phase or session, both systems promote indirect attention to, and unconscious absorption of lesson materials while the students are in a relaxed state. The aim of both Suggestopedia and the Tomatis Method is to develop the whole personality of the individual in a pleasant learning environment.

It was in the late 1960's and early 1970's that, in Sofia, Bulgaria, at the Institute of Suggestology headed by Dr. Georgi Lozanov, a team of experts led by Aleko Novakov combined yoga relaxation and verbal suggestion with the direct method to produce a unique system of foreign language teaching: Suggestopedia. Somewhat earlier, in the 1950's in France, Dr. Alfred Tomatis began his research into the ear and the voice and began developing his own unique system for treating dyslexia, on the one hand, and teaching foreign languages, on the other. As in the case of Caycedo's Sophrology and Lozanov's Suggestology, Tomatis' system, which was originally applied to the field of medicine, led to important consequences for pedagogy.

There are, of course, differences between the Tomatis Method and Suggestology/Suggestopedia—more differences, in fact, than between Suggestology/Suggestopedia and Sophrology (Bancroft, 1979). However, there are a number of important similarities between Tomatis' and Lozanov's discoveries and methods, similarities which it is the purpose of this paper to explore.

Both Lozanov and Tomatis are medical doctors, therapists and researchers who have been influenced by yoga. As is well known,



Lozanov is a yogi. Tomatis' son is involved in the French Yoga Federation and Tomatis himself has studied yoga; in his autobiography, *L'Oreille et la Vie*, he pays tribute to the benefits of yoga and says that the ideal in medicine as in education should be a holistic approach based on yoga (Tomatis, 1977, p. 129; pp. 259-61). Lozanov, it will be remembered, emphasizes the integration of the conscious and the unconscious and the linking of mind and body; in *Suggestology and Outlines of Suggestopedy*, he says that "suggestopedy stimulates not only the memory, but the whole personality—its interests, perceptions, creativity, moral development, etc." (Lozanov, 1978, p.251).

In his theoretical writings and his various pronouncements on Suggestology, Lozanov emphasizes the authority of the doctor or teacher and the "infantilization" or spontaneity and confidence of the subject or student. Tomatis stresses the role of the "n.aître" and underlines the importance of the personality of the therapist or teacher in much the same way as Lozanov (Tomatis, 1978, pp. 36-37). And, like Lozanov, Tomatis declares that a special relationship or pact of confidence must exist between the doctor or teacher and the patient or student (Tomatis, 1978, p. 269). Suggestology talks about the role of the environment, both social and physical, using the term "double-planeness." Tomatis considers the milieu to be an essential factor in treatment or pedagogy and stresses the importance of the family atmosphere as well (Tomatis, 1978, pp. 50-51; pp. 141-43). In Tomatis' therapy, the parents are involved from the beginning in the child's treatment process.

Lozanov stresses the importance of intonation or tone of voice in the pedagogical or therapeutical process. While it would appear that the Bulgarian teachers at the Institute of Suggestology naturally possessed (or possess) the soft, persuasive, suggestive voice needed for reading the language dialogue over a musical background and hence needed (or need) little or no special voice training, the voice in Suggestology/Suggestopedia, as in Soviet therapy, is considered to be a stimulus capable of provoking emotional and physiological reactions in the subject. (It will be remembered that the special voice or Terpnos Logos in Sophrology is considered to be instrumental in bringing about the appropriate state of relaxed alertness in the patient or student and that yoga emphasizes the correct positioning of the voice [Bancroft, 1979]. Tomatis lays great stress on voice training and on the voice—not surprisingly as he was trained as an ear specialist, his father was a well-known singer and he has spent many years treating singers' voice problems. Those individuals selected to make recordings for the Centre du Langage (Centre Tomatis) in Paris must have the appropriate voice quality: "(une voix) modulee, timbree, riche en frequences elevees" (Tomatis, 1978, p. 142). Tomatis emphasizes the importance of the

mother's voice in his treatment of dyslexia and recordings of the mother's voice are used during certain therapeutic sessions. While Lozanov does not seem to have mentioned anything on the subject--at least in writing--one remembers that women's voices were the norm in the Suggestopedic classroom in Bulgaria and the Soviet Union.

Lozanov emphasizes the importance of rhythm in the pedagogical or therapeutical process; in *Suggestology and Outlines of Suggestopedy*, he states, for example, that the rhythmically correct intonational presentation of the program for memorization ensures that a large volume of material will be memorized and retained (Lozanov, 1978, pp. 196-97). Tomatis also stresses the importance of rhythm in language and in his treatment process for dyslexia he attempts to reproduce, through music, the cardiac rhythm that the child once heard in the womb.

It will be remembered that an important theoretical principle of Suggestology was "concert pseudo-passivity." This term refers to the concept that rote learning or the healing process is best realized when the recipient is in a state of relaxed alertness. This state of "pseudo-passivity" is based on, or derived from Savasana yoga and may be brought about, in part, by the appropriate choice of music as background to a special passive (or concert) session. Like Lozanov, Tomatis believes in the importance of a relaxed atmosphere ("atmosphere de détente"), correct posture and proper breathing (Tomatis, 1978, p. 119; p. 134; pp. 140 ff.). As we shall see, Tomatis favors music that is very similar to that originally used by Aleko Novakov in the suggestopedic *seance*. While the original suggestopedic session favored baroque violin concerti or baroque chamber music for strings and *basso continuo*, Tomatis prefers the high frequencies of Mozart violin concerti and/or the slow rhythm of Gregorian chants in his treatment of dyslexia, on the one hand, and in his basic language programs, on the other. Positive suggestions for pleasant learning, given while the subject is in a relaxed state, are a feature of both the Tomatis and Lozanov Methods.

#### SUGGESTOPEDIA: THE ORIGINAL SUGGESTOPEDIC LANGUAGE CLASS

As set up at the Institute of Suggestology in the late 1960's and early 1970's by Aleko Novakov and his colleagues, the original suggestopedic language class was based on, among other things, yoga and the Mauger direct method. Three forms of language learning--activity, conscious analysis and unconscious assimilation--were incorporated into the original language class in what was termed the "suggestopedic cycle" (Bancroft, 1976).

The four-hour intensive class normally began with a review of the

previous day's lesson in the form of conversational exchange, songs, games, story-telling, sketches and plays. To help overcome inhibitions and to allow for more spontaneous expression in the classroom, each student was given a new name and a new profession. Each "foreign" identity assigned contained repetitions of one or more phonemes that students would find difficult to pronounce in the target language.

In the second part of the suggestopedic class, conscious analysis was realized in the form of reading, grammar and translation. The new material presented to the students consisted largely of real life dialogues. The dialogues involved general or universal situations (home, family, daily activities, renting a hotel room, eating in a restaurant, city and country tours, cultural events) and were designed to stimulate positive emotions in the students. The dialogues were originally arranged on the page in groups of three, with five groups of three phrases or sentence fragments to a page. The translation of each word-group was provided in a column at the right of the page. All phrases were simple and straightforward and, as in Soviet sleep-learning programs, each phrase presented one information unit. Since, during the original *seance* or relaxation session, each word-group was read in twenty-four seconds, each page of dialogue involved two minutes and each ten-page dialogue twenty minutes of reading. Twenty minutes is the ideal meditation period in yoga.

The third part of the suggestopedic language class, the *seance* or relaxation session, provided for memorization of the new material at an unconscious level. Originally, at least for the "concert" part, the alternate Savasana posture was used. The students were trained to breathe deeply and rhythmically as a group to a count of eight that accorded with the teacher's reading of the language material and/or with the beat of the baroque slow movements in the background.

Originally based on two forms of yoga concentration (outer/inner), the *seance* was divided into two parts, active and passive, with active or outward concentration on the material preceding the rest and relaxation of passive meditation on the text. During the active session, the three words or phrases of each group were presented together, each with a different intonation or voice level: Where do you study English?—declarative; We study English at the Institute of Suggestology—whisper; Is the Institute a school for foreign languages?—loud command. The three intonations (declarative, whisper, loud command) correspond to three forms of yoga suggestion. During the active session, the students looked at the dialogue on the printed page and repeated to themselves (using the technique of inner speech) the difficult foreign words and phrases.

The original concert session (or passive part of the *seance*) was divided into three parts: 1) a two-minute introduction which served as a

"countdown;" (the opening Sarabande from Bach's *Goldberg Variations* played on the harpsichord with a metronome speed of 70 to 80, the beat of the normal human pulse; 2) a series of slow movements from baroque *concerti grossi*, lasting some twenty minutes, over which the teacher acted out the lesson dialogue with an emotional or artistic intonation and during which the students, with eyes closed, meditated on the text; 3) a fast, cheerful flute excerpt from baroque music, lasting some two minutes, which brought the students out of their deeply relaxed state.

The slow movements used in the original concert, excerpted from the *concerti grossi* of Corelli, Handel, Vivaldi, Bach and Telemann, have, by definition, a rhythm of 60 beats to the minute (MM60), the ideal beat for meditation in Indian music. A sustained melody in the violin or string section and a steady bass accompaniment are other important features of baroque slow movements composed during the period 1700-1750. In the original concert session, the teacher maintained the correct rhythm of the language dialogue while giving each phrase an artistic reading. The lyrical and rhythmic music, the artistic and rhythmic rendering of the text by the teacher, the rhythmic, deep breathing and meditative state of the students ("concert pseudo-passivity") contributed to a marked decrease in fatigue and tension and a marked increase in the memorization of language materials.

### THE TOMATIS METHOD

Trained in France as an ear, nose and throat physician, Tomatis has also achieved world-wide recognition for his work in the area of learning disabilities. As part of his clinical practice in the 1950's and subsequently, Tomatis saw a wide range of patients, from opera singers to workers suffering from the effects of industrial noise. In treating these patients, he detected evidence that speech was affected by hearing loss. Further investigation of this phenomenon led Tomatis to the belief that one can only vocally reproduce what one can hear ("la voix ne contient que ce que l'oreille entend"), an axiom that was given official recognition in 1957 by the French Academy of Science as the "Tomatis Effect" (L'Effet Tomatis).

Just as there is a difference between looking and seeing, where seeing involves the movement of the eye muscles for proper focussing, so, too, there is a difference between hearing and listening where listening involves the movement of specific ear muscles for proper "focussing." This means that a child may be able to hear well but still not be able to listen properly to what is being said to him; he may "hear" but not be able to integrate the message.

Tomatis believes that a listening deficiency causes the child to receive sound in a distorted manner. As the child makes unsuccessful attempts to discriminate between the verbal message and surrounding noise, he becomes fatigued and frustrated. His attention span is shortened. Moreover, the child's normal language development and, therefore, his relationship to the outside world can be affected, especially if the ability to listen to particular frequencies is lost at an early age due to such causes as chronic middle ear infection. Since reading is the act of placing a phonetic or sonic image on a letter and spelling is the converse, a child's inability to listen properly may be a significant contributing factor in dyslexia. In addition, as a child attempts to cope with this listening deficiency, he may manifest such behavioral changes as withdrawal, hostility, hyperactivity, and lack of motivation. Consequently, Tomatis believes that, in dealing with and treating learning problems, there is both a physiological need to train the individual to listen properly and a psychological need to enhance the person's self-image.

Unlike other methods which attempt to assist a child to adapt to, or compensate for the problem of a learning disability, the Tomatis Method attempts to "effect a repair." This is achieved through a controlled process of auditory stimulation using sophisticated electronic equipment and special control interviews with the child and his parents at defined times in the program. Although child-oriented, the Tomatis Method stresses parental involvement since the interest and support of the parents is an integral and beneficial part of the training. (Tomatis considers the mother to be especially important and each mother is encouraged to take the same training as her child, especially in the early stages so that she will understand what her child is experiencing). The child's teacher(s) can also provide encouragement and important feedback to the Program Consultants at a Tomatis Center by noting changes in the child's behavior and actions. At appropriate intervals, such as at the end of the school year, case consultations may be held with the parents, teacher(s) and the Tomatis Program Consultants to assist the teacher(s) in planning the most appropriate courses for the following year.

The first step in the Tomatis program for treating dyslexia is the Initial Assessment of the child, an assessment which is conducted in two stages. Firstly, the child's case history is recorded and several tests are made—including a test of the child's listening ability. Then the child is interviewed by the Program Consultant. In a second stage, several additional psychological tests are conducted to determine the child's intellectual ability, his level of general achievement and other factors. The Initial Assessment generally entails about four and one-half to six hours and is used to determine the child's current status and his ability



(or inability) to benefit from the Tomatis program. The type of program recommended by the Program Consultant is based upon the results of the Initial Assessment. Although the steps followed in the Tomatis program are identical for everyone—they consist of a progression which simulates the various stages of listening and language development—the length and organization of each program-stage may vary from child to child. Variations in the program are monitored by the Consultant through the Control Interviews. Individual program sessions last approximately thirty-five minutes and children usually come three times a week for a two and one-half hour period (i.e., four tapes of thirty-five minutes). Separate remedial training is conducted in the appropriate subject(s) of study. Control Interviews are planned to follow every twenty program sessions. As part of the Control Interview, the child receives another listening test and the child's progress is reviewed with the child and his parents.

The Tomatis program consists of two major parts: the Passive Phase (listening training), during which the child listens to sounds, and the Active Phase (audio-vocal training) which requires the subject's active and vocal participation. Employed throughout the listening training is the special electronic instrumentation specially designed by Tomatis (in particular, a machine called the "Electronic Ear").

#### PHASE ONE: LISTENING TRAINING OR PASSIVE PHASE

During the first (or passive) phase, the child receives auditory stimulation through earphones which include a vibrating device placed on the forehead. (The earphones are attached to the "Electronic Ear" which is attached to the tape recorder). Music is used in the initial stages of what is called a "retour sonique"—a return to the sound conditions of the mother's womb. (The sound world of the uterus resembles a liquid world, a waterfall with chirping noises; the mother's respiration is perceived as a kind of flux and reflux). The child listens to Mozart's symphonies or violin concerti; for Tomatis, Mozart is *the* universal composer but such baroque composers as Vivaldi are also used. At first, the music is unfiltered but, as the thirty-five minute sessions proceed, the music becomes more and more filtered so that only the higher frequencies remain. (The acoustic impressions the fetus receives in the uterus are high-frequency sounds; filled with water, the foetus receives in the uterus are high-frequency sounds; filled with water, the foetal ear acts like a filter, selecting, as it were, the frequencies the foetus hear [Tomatis, 1977, p. 198; p. 206]. The child thus hears Mozart violin music—the violin being the instrument that has the most high frequencies—from, say, sessions one through fourteen.

with the progressive removal of frequencies below 1,000 Herz, 2,000 Herz, 3,000 Herz, 4,000 Herz and so on. As the music becomes more and more filtered, finally only those frequencies above 8,000 Herz are present in the "music." According to the research that has been conducted by Tomatis and his associates, high frequencies bring about a state of relaxation, on the one hand, and stimulate the cortex, on the other (Tomatis, 1972; Madaule, 1973). Low frequency sounds, in contrast, provoke a state of fatigue and anxiety.

With session fifteen, the child begins listening to a recording of the mother's voice, at first in a very filtered form (i.e., only those frequencies above 8,000 Herz are present). According to Tomatis, one's first desire is to communicate with the mother and/or to recommunicate with the mother in the womb. Tomatis uses female voices in his various language programs, particularly in the beginning stages. The male voice, the voice of the "father," is heard later. With adopted children, a "maternal" voice is still used and, in foreign language training, a female native speaker replaces the mother, as it were, in the reading of texts. Initially, the mother's voice sounds something like crickets chirping as only high-frequency sounds (such sibilants as *s*, *z* and *th* in English) are audible. The mother's voice is perceived as one perceived it in the womb. From sessions fifteen through fifty, in the various stages of what is called an "accouchement sonique"/ (a sonic birth), the mother's voice becomes less filtered as the missing frequencies are gradually reintroduced. In the same way as a baby progressively hears during the ten days after birth in his evolution from the liquid world of the foetal ear to the sound world of air, one begins to hear a thin voice, then a more complete voice and finally the full voice of the mother reading a story. The mother undergoes voice training, if necessary, in order to learn to position her voice correctly and the reading is done under the Electronic Ear to improve the timbre of the voice.

In this approximation (or simulation) of a sonic birth, the child at first does not identify the mother's voice but he is able to recognize it at the end of the process. By session sixty-two (or thereabouts), the child begins to hum and repeat words; the active phase has begun. One might add, however, that the child does not remain entirely "passive" while listening to the filtered music and the filtered voice of the mother. While wearing head phones and a head band (the sound volume is adjusted to the individual's comfort level), he or she is engaged in a variety of creative activities such as drawing, writing and playing games in a specially designed room. As in Suggestopedia and in Sophrology, emphasis is placed during the passive phase of the Tomatis program on indirect attention.

During the so-called passive phase, the children are particularly

encouraged to do art work and all drawings are kept on file by the staff of the appropriate Tomatis Center. Usually the child's progress while listening to filtered music can be clearly seen in the creativity of his drawings; these become more decorative, more expressive, better defined. Colors are brighter. It would appear that the awakening of the ear has a positive effect on the eye. The daily sessions are supervised by a staff of therapists who have a background in such fields as special education and psychology and who have undergone special training under Tomatis' direction. Daily observations of the children are recorded by the therapists and assistants. These reports as well as discussions with the Program Consultant provide an on-going assessment of the child's progress at the Center.

During the passive phase a number of changes begin to occur in the children. According to Tomatis, re-training the ear has a positive effect on the entire nervous system. Right from the beginning of the program, the children usually show changes in eating, sleeping and/or behavioral patterns. During and following these early changes, the child appears to be calmer, more out-going and in better humor. Parents frequently mention that their child is more communicative and takes a greater interest in family activities. A balance is achieved: the more excitable child calms down and the more withdrawn child opens up. The child also mentions that he or she can hear people talking more clearly: "They don't have to repeat what they say." The child starts to read (or reads more than usual) and reports that reading is easier and more interesting. The child's attitude towards learning in school often becomes more positive. His concentration begins to improve.

Much of the music research of Tomatis and his associates has centered on the effects of filtered music on children with communication problems and learning disabilities. Since filtered music reproduces the sonic atmosphere of the mother's womb, the sessions of filtered music may be said to be situated, in the educational memory of the child, between life in the womb and the beginnings of the acquisition (or the hearing) of language. Filtered music acts as a catalyst, relaxing the child, on the one hand, but stimulating him, on the other, to participate in the world of sounds that precedes the world of speech. The filtered music permits the child to recoup his needed energies so that he may overcome his learning and communication problems. Sessions of filtered music are frequently used in alternation with "language sessions" in Tomatis Centers, even after the so-called passive phase has been completed.

#### THE ACTIVE PHASE: AUDIO-VOCAL TRAINING

The purpose of the active training phase is to aid the child in the

proper use of his or her corrected listening ability. An analogy might be made to a pianist who, having learned to play on an out-of-tune piano, must now be taught to play a properly tuned instrument. During this phase the child is asked to listen to tapes of different kinds (singing, words, sentences, for example) while under the Electronic Ear and to reproduce vocally what he hears into a microphone. Singing is particularly favored as a memory-training and linguistic structuring device. Tomatis makes use of Gregorian chants which the child hears and repeats during the active phase—Gregorian chants are used because of their slow rhythm and high frequencies. During the active phase of the foreign language training program, foreign-language songs are used. The reproduced sound is automatically adjusted by the electronic equipment so that the child hears his or her own voice correctly. Furthermore, during the audio-vocal training period, a balance system permits the sounds to be progressively focussed on the right ear (i.e., the left hemisphere of the brain) which Tomatis believes is the key to proper listening. The child is encouraged to read aloud, both during the sessions and at home. This active phase continues through a series of sessions and Control Interviews until a combination of the results of the listening tests, observations and interviews signals an end to the program.

It might be added that the same system of active and passive phases is applied to basic language learning. The Tomatis Effect is used in collaboration with regular language programs taught by audio-visual methods. Vocabulary taught in Tomatis sessions (i.e., active sessions) takes word frequency and sounds into account; for example, those words first used are those which are rich in high frequencies, the sibilants.

The end of the appropriate Tomatis program for dyslexia generally occurs after twenty to twenty-four weeks of training. Each child will usually be asked to return once a month for two months and thereafter every other month for follow-up Control Interviews and evaluations. However, a long history of academic failure may leave the child hesitant to put into practice his newly developed abilities to listen and to learn. Furthermore, he or she may still suffer from poor learning habits. The help and support of parents and teachers will be important at this stage as the child strives to accomplish his or her goals. In follow-up Control Interviews with the Program Consultant, tutoring or special teaching may be recommended.

## THE ELECTRONIC EAR AND LANGUAGE TRAINING

An important feature of the Tomatis programs for treating dyslexia and communication problems, on the one hand, and teaching basic

elements of foreign languages, on the other, is the use of a special machine called the Electronic Ear ("L'Oreille Electronique"). A definition of the Electronic Ear is given in a work by Robert Lafon, *Vocabulaire de Psychopedagogie et de Psychiatrie de l'Enfant* and repeated by Tomatis in his book, *Education et Dyslexie*: "Appareil compose d'un microphone, d'amplificateurs, de filtres et d'ecouteurs, employe pour la reeducation des troubles phonatoires et de la dyslexie. Couple avec un magnetophone, il permet le conditionnement aux langues etrangers" (Tomatis, 1978, p. 145). A specially designed machine placed between the tape recorder and the head phones, the Electronic Ear modifies the sounds the recipient hears and, more especially, retrains the ear to hear sound correctly, in particular, high-frequency sound.

Not surprisingly, since he is an ear specialist, Tomatis lays great stress (some would say too great) on the importance of the ear in language training. In a monograph by his wife and collaborator, Lena Tomatis, entitled *L'Integration des Langues Vivantes*, one finds statements like the following: "On parle avec son oreille; On apprend une langue vivante en l'entendant et en l'entendant correctement" (Tomatis, 1970, pp. 5-6). Tomatis well realizes that the best place to learn, say, French, is in a French-speaking milieu or country. In the classroom—which is an artificial milieu by definition—the student must be "integrated" into the sound universe ("univers sonore") of the foreign language. The Electronic Ear is particularly useful in this regard because, by changing the frequencies the ear hears, it permits the student to hear and, eventually, to speak in the manner of the appropriate native speaker.

Through the use of the Electronic Ear, Tomatis recreates the hearing conditions of childhood when one learned one's mother tongue. He believes that if, during a given period of time, the "lost" frequencies are made audible to the ear, these frequencies will become a part of speech. The adult learner thus recovers the "ear" he possessed in childhood and is able to hear correctly the appropriate foreign-language sounds. Tomatis is particularly interested in retraining the right ear (which he calls "L'Oreille Directrice") because he believes that the right ear controls such language parameters as intensity, timbre, intonation, inflection and semantics (Tomatis, 1970, p. 9).

An interesting aspect of Tomatis' research involves the analysis of the frequency range of a number of European languages, including Russian. The human ear is able to perceive frequencies ranging from 20 cycles per second (20 Herz) to 20,000 cycles per second (20,000 Herz). However, if an individual is raised in a given linguistic environment, his ear will gradually "hear" only those frequencies that are a part of his mother tongue. Statistical analyses of "English" English show that the



native English speaker uses a frequency range that is between 1,800 Herz and 12,000 Herz. The Italian ear, meanwhile, can "hear" frequencies between 2,000 and 4,000 Herz while the French ear is tuned to hear frequencies between 800 and 1,800 Herz. The Russian ear is tuned to a frequency range going from the lowest to the highest frequencies which the human ear can normally perceive. It has always been said that the Slavs "have an ear" for languages and Tomatis' research proves this statistically. These frequency-range analyses relate to Tomatis' ideas on language training because "entendre" and "reproduire" (hear and reproduce) are two essential principles of Tomatis' language programs. If one is listening, say, to English with a French ear, one will not be able to reproduce English accurately. By the same token, a native English speaker could be "deaf" to the subtleties of French vowels, all packed in, as it were, into a narrow frequency range.

By modifying the frequencies the ear hears, the Electronic Ear "opens" the human ear to the new sounds and different frequency range of the foreign language. In contrast to the language lab where the student very often does not "hear" the foreign-language sounds correctly and thus is unable to reproduce them, the Electronic Ear permits the correct perception of the "foreign" sounds and gives rise to correct reproduction. Tomatis is critical of the audio-visual methods generally in use for, he says, they fail to take into account the special relationship which exists between audition and phonation. Tomatis believes that the Electronic Ear should become a part of every language laboratory because he has found that this special machine improves not only the student's accent and speech patterns but also his auditory memory. The Electronic Ear trains the student to listen to his own speech: "Parler, c'est s'entendre" (Tomatis, 1970, p. 33). It is the ear which must regulate such linguistic elements as intonation and inflexion and, while under the Electronic Ear, the student learns to monitor himself in these matters through listening to himself speak.

In *L'Integration des Langues Vivantes*, Tomatis recommends that the Electronic Ear should be used before foreign language lessons actually begin so that the ear may become conditioned to the sounds of the foreign language (Tomatis, 1970, p. 34). Of course, recordings and equipment should be of very high quality and the frequency range of the equipment should be verified; the sound reproduction should be accurate for the frequency range of the appropriate language. For "false beginners," Tomatis recommends the same procedure, i.e., one must begin over again in order to correct the false perception of the foreign-language sounds. Together with (or as a part of) lessons in class, at least ten or fifteen minutes a day should be devoted to phonetics exercises while the students' head phones are attached to the Electronic

Ear. These phonetics exercises should involve sounds, rhythms and intonation patterns, i.e., those elements of the foreign language that the student usually has the most problems "learning." The student's pronunciation should be worked on and the phonetics exercises should involve participation on the part of the student.

Corresponding to the original active session in the Suggestopedic language class, Tomatis emphasizes that a very effective technique for learning foreign languages is the combination of audio and visual elements (Tomatis, 1970, p. 32). Parallel to the phonetics exercises, visual images can be projected on a screen so that the student can coordinate sound and image.

Following this special training with the Electronic Ear and together with it after an introductory period, the student must, of course, be taught grammar and vocabulary. Tomatis' language programs involve a movement from *son* to *sens* (sound to meaning). Tomatis says that his programs--and especially those which involve the Electronic Ear--can be used in conjunction with recognized modern methods. The Tomatis Effect can also be combined with scientific research in such fields as phonetics and phonology.

#### CONCLUSION: SUGGESTOPEDIA AND THE TOMATIS METHOD

A number of theoretical comparisons between Suggestopedia and the Tomatis Method were noted at the beginning of this paper. Insofar as the practical aspect of both systems is concerned, it is interesting to note the common use of active and passive phases or sessions, although there are differences between the active and passive sessions in Suggestopedia and the active and passive phases of Tomatis' programs. (These differences relate mainly to program content). In the original Suggestopedic sessions(s), the active part of outward concentration on the text, combined with inner speech or silent repetition of the text, preceded the passive part of inner meditation on the dialogue which the teacher read over a background of baroque slow movements. In contrast to Lozanov (but like Caycedo), Tomatis puts the passive phase of indirect attention and music (music which is similar to that used in the original Suggestopedic concert) before the active phase of concentration on the text and speaking or reading aloud. According to Tomatis, music seems to provoke in the child the memory of a pre-linguistic stage, as well as the desire to speak and communicate.

Both the Lozanov and Tomatis Methods favor listening before speaking. In the Tomatis programs, with their emphasis on the ear, the child (or the student) is trained to listen in order to correct his speaking or reading problems and/or learn a given foreign language. According to Aleko Novakov's theory of "interiorization of language," meditation

on, or visualization of a text furthers the students' ability to speak and communicate, as well as memorize. It will be remembered that a given Suggestopedic dialogue was read to the students during the active/passive *seance* and then elaborated upon in conversations, games and sketches the following day. It could be said that both Suggestopedia and the Tomatis Method favor the ear (but Tomatis' system much more so) and that, in both methods, there is a transfer from ear to performance, a movement from listening to speaking. Tomatis favors electronic equipment, whereas Suggestopedia has been opposed to such things as language laboratories. However, it could be said that no Electronic Ear was needed in Bulgarian or Soviet Suggestopedia because, according to Tomatis, the Slavs hear all the frequencies necessary for learning a Western foreign language.

Both Suggestopedia and the Tomatis Method use a variety of activities in language learning (games, for example) and both attach particular importance to singing. Both systems stress the importance of repetition and the coordination of the oral and the visual, of sound and image. Both methods are said, by their proponents, to develop attention span and memory. And, finally, both the Tomatis and Lozanov Methods are holistic in that they aim to develop the whole personality of the individual in a pleasant learning environment.

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Une étude comparative de la méthode Tomatis et de la Suggestopédie

Développée en Bulgarie dans les années 1960 par le Dr Georgui Lozanov, la Suggestopédie constitue un système unique pour enseigner les langues étrangères, en ce qu'il allie la relaxation de yoga et la suggestion verbale à la méthode directe. Dans les années 1950 en France, le Dr Alfred Tomatis a commencé à faire des recherches dans le domaine de l'oreille et de la voix et par la suite a développé un système seul en son genre pour le traitement de la dyslexie d'une part et pour l'enseignement des langues étrangères d'autre part.

Lozanov et Tomatis sont tous les deux médecins, thérapeutes et chercheurs scientifiques qui ont été influencés par le yoga. Tous les deux soulignent l'autorité du professeur, l'alliance spéciale qui doit exister entre le professeur et l'étudiant et le rôle du milieu physique et social. Ils attachent beaucoup d'importance aussi à l'intonation (ou ton de la voix) ainsi qu'à la présentation rythmique du matériel.

Et la méthode Tomatis et la méthode Lozanov utilisent de la musique baroque ou classique pour violon et insistent sur l'éducation de l'oreille et le développement de la mémoire par l'audition et la répétition. Comprenant une phase ou une séance active de même que passive, les deux systèmes favorisent l'attention indirecte et l'assimilation inconsciente du matériel (ou de la leçon) tandis que les étudiants sont dans un état de relaxation.

Le but de la méthode Tomatis et de la Suggestopédie est le même: le développement de la personnalité intégrale de l'étudiant dans un milieu agréable et qui facilite l'apprentissage.

Die Tomatis Methode und Suggestopädie: Eine Vergleichs-  
untersuchung

Suggestopädie, die von Dr. Georgi Lozanov in den sechziger Jahren in Bulgarien entwickelt wurde, ist ein einzigartiges System, das Entspannung durch Yoga und Suggestion mittels des gesprochenen Wortes mit der direkten Methode verbindet. Dr. Alfred Tomatis begann seine Forschung über das Ohr und die Stimme in den fünfziger Jahren in Frankreich, und entwickelte danach sein einzigartiges System, mit dem man Dyslexie behandelt und Fremdsprachen lehrt. Lozanov und Tomatis sind beide Ärzte, Therapeut und Forscher, die von Yoga beeinflusst wurden. Beide betonen die Autorität des Lehrers, den Vertrauenspakt zwischen Lehrer und Studenten und die Rolle der physischen und sozialen Umstände. Beide legen Wert auf die Bedeutung von Satzbetonung und Klangfarbe der Stimme sowie die rhythmische Darstellung des Textes.

Auch die Tomatis- sowie die Lozanovmethode befürworten den Gebrauch von Geigenmusik des Barock- bzw. Klassikstils. Sie legen Nachdruck auf das Trainieren des Ohrs und die Stärkung des Erinnerungsvermögens durch Hören und Imitieren. Beide Systeme, die eine aktive und eine passive Phase oder Sitzungsperiode beinhalten, fördern die indirekte Aufmerksamkeit auf den in der Stunde behandelten Text und dessen

unbewußte Aufnahme, während sich die Studenten in einem entspannten Zustand befinden.  
Das Ziel von Suggestopädie und auch von der Tomatiemethode ist die Entfaltung der ganzen Persönlichkeit des Individuums in einem angenehmen Lernmilieu.

#### EL METODO TOMATIS Y LA SUGESTOPEDIA: UN ESTUDIO COMPARATIVO

Resumen: Desarrollado en la década de los años sesenta por el doctor Georgi Lozanov, la Sugestopedia es un sistema único para la enseñanza de idiomas, combina la relajación yoga y la sugestión verbal directa. En la década de los años cincuenta el doctor Alfred Tomatis comenzó a investigar el sistema auditivo y la voz y subsecuentemente desarrolló su propio sistema único para el tratamiento de la dislexia y para la enseñanza de idiomas. Ambos Lozanov y Tomatis son doctores en medicina, terapistas e investigadores y ambos han sido influenciados por yoga. Ambos enfatizan la autoridad del maestro, el pacto de confianza entre el maestro y el estudiante y el papel que desempeña el medio ambiente físico y social. Ambos enfatizan la importancia de la entonación, o tono de la voz al igual que la importancia de la presentación rítmica del material. Tanto el método de Tomatis como el de Lozanov favorecen la utilización de la música barroca o clásica de violín y enfatizan el entrenamiento auditivo y el desarrollo de la memoria por medio de escuchar y repetir. Ambos sistemas dirigen atención indirecta, incluyendo una fase o sección activa y otra pasiva, a la absorción inconsciente del material presentado en la lección, mientras los estudiantes se encuentran en un estado de relajamiento. El propósito de ambos métodos, la Sugestopedia y el de Tomatis, es desarrollar la personalidad completa del individuo en un ambiente placentero y educativo.



## **Report on an experiment with the CLC SYSTEM of Accelerated Learning**

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### **Abstract**

The author reports an experiment carried out at Rio de Janeiro State University from 1977 to 1981 and discusses the intellectual and muscular aspects of learning a language. This article opens a new way in language teaching, having muscle memory (or body memory) as its chief aspect. Repetition is necessary to train muscles, although it may suggest difficulty. The idea of difficulty is eliminated when students know that the repetition is for muscle training since learning a language intellectually is simple. Conversation is an objective to be attained and not a teaching method. Also presented is brief description of the LEARNING SPEEDER(R), an electronic apparatus created by the author to accelerate learning; the student listens to his/her own voice at the very moment of utterance in real time. The "Learning Speeder" also works as a portable language laboratory, which may be used individually or in groups.

### **THESIS**

The basis for the experiment was the thesis that learning a language is not only an intellectual process but also a muscular one. Suggestopedia is really effective in the first aspect, but it fails in that it does not consider the muscular training as indispensable. It is not enough for the brain to transmit the order; it is necessary that the muscles responsible for the production of speech respond promptly. WE HAVE TO TEACH THE MUSCLES HOW TO SPEAK.

### **INTRODUCTION**

We don't learn a foreign language merely by listening to it. There is no such thing as a conversation method for language learning or teaching. Speaking is a faculty. Conversation is an objective to be attained through attitude, procedures, exercises and activities, besides guided dialogues based on real life situations, all these actions emphasizing the repetition of patterns in contextual structural exercises and flexibility of use with these structures with internal transformation in a communicative positive atmosphere. We can only accept the label "conversation" for a course when teachers train the student's faculty of expression, using their (teachers' students') brain reserves (we normally

use approximately 10% of them), Lozanov, 1971, drill the use of structures and the recombination of elements within these linguistic patterns. This would be an acceptable explanation of a conversation method. It is necessary to try, to err, to correct the mistakes (not the students themselves) and to repeat the structures of the language again and again. In the process of speech mind and muscular system collaborate intimately. The brain transmits the order and the muscles must respond promptly for the production of sounds.

The repetition of a same act leads to automation (practice makes perfect) which depends on the *medular memory* as we learn from Physiology (Luria, 1974). Since ancient times it has been well known that *repetitio est mater studiorum*. We think in a foreign language when we don't have to think to speak.

There are a large number of things generated by routine, by repetitive activities. In order to perform such activities a person need not "think", in the sense of interrupting the flow of memories or concentrating on what he (she) is doing. For example, we can do up a shirt while speaking about a subject having nothing to do with this activity. We can tie the lace of a shoe and speak of another thing at the same time. We can drive a car and talk to a person simultaneously, yet if we analyse each necessary movement to do up a shirt, to tie a shoe or drive a car, we see how complex these activities are.

The brain is an emergency organ (Walter, 1963). As long as it is possible by means of registers, patterns, it relegates everything to other areas of the nervous system, giving rise to what we call the "medular memory". Thus, in speech, the muscular system, chiefly those muscles responsible directly for producing speech, has a *memory* for producing the sounds of the language. Mouth, vocal chords, lungs and other parts of the body must know how to speak themselves.

There is automatism (automatization) when such organs work together in the production of a given sound. The mere production of the simplest vowel sound is a complex activity reduced to patterns of information. In the presence of situations which call for a routine answer, such as for example: "How are you?" (this is an example of a signal-Pavlovian reflex), for the production of the answer "Well, thank you" the cerebral cortex has already delegated to other areas the production of the answer. When a speaker says "Well, thank you", there is a brain register which reacts and brings such muscles into action. Due to the medular memory, language (linguistic elements) can be in the background while the conceptual content of the message is in the foreground.

It is through patterns that we encode and decode all information we receive. In order to register information the brain has to organize it in "patterns" since it receives more than 100 million data every second

while we are awake, only 50 million (?) a second when we are asleep. In linguistic terms, a pattern is a structure. When we go up a staircase, already on the first step the brain organizes such data as "height of the step", "necessary strength to lift one leg", "necessary strength for the other leg to maintain the whole weight of body when the other leg is lifted etc", but these data are not separate; they are part of a "pattern". We repeat that, in linguistic terms, a "pattern" is a "structure". When we need to utter something the brain must already have a pre-structured pattern so that we don't have to organize the linguistic elements in order to express what we have thought. We arrive at this phase through repetition.

The brain register is a pattern which, in linguistic terms, corresponds to a "structure" of signalization. Thus, faced with a real situation, the brain does not deal with isolated signals but with wholes (patterns) and intervenes only to change elements of the wholes (patterns, structures) and does so even when the prompt answers (from the viewpoint of registers) fail to satisfy needs of communication.

Teaching experience has confirmed many data of experimental physiology to such a degree that we can state that there is a need for developing "registers", "patterns", "structures". Experience also shows that the students must develop flexibility in the transformation of elements within the structures. We can achieve this through a great deal of repetition of many exercises adequate to the objective aimed at: the natural conversation.

A conversation is split into structures with little intervention of the emergency section of the brain, the cerebral cortex, so that the linguistic framework be constituted in the least period of time and with a minimum effort.

The structural exercises correspond to the needs of the physiology of the nervous system. When you listen to something and repeat it many times, you automatize it, that is, you make the thing ready to be used when needed, without interference of the higher levels of the brain. This gives the nervous system an infrastructure to cope with the "emergency instants" that inevitably appear when a person is learning a language. All this provides an opportunity for the cerebral cortex to show what a person is really capable of.

### *THE EFFECTS OF THE STRUCTURAL DRILLS*

There are two aspects involved in the process of learning/teaching a foreign language: the mental/intellectual one and muscular one.

When learning his mother tongue a person intellectually learns how to say a given word and what it represents. Let us consider the first words "papa", "mamma". Little children easily learn how to recognize

the persons designated by these sounds but only after a long period of repetition of the words is the child able to reproduce the sounds. After they have learned how to articulate the sounds of the mother tongue, there begins a long period of repetitions (about two years) until the child learns how to speak with his/her limited vocabulary. It is by means of repetition that the organs of speech are trained to speak the mother tongue. Later on, after the muscles have been trained to speak the mother tongue, the person decides to learn a foreign language. Mentally/intellectually it is easy, quite easy. It will also be easy for the muscles if they are adequately trained, since muscles learn by repetition of exercises. After the foreign language has been learned intellectually, if the person wants to use it as an effective instrument of communication it is necessary to do exercises, chiefly structural drills, not mechanical, parrot-like drills, but exercises with the meaning the previously presented real life situation conveys. Such exercises are also intended to provide superlearning, which will produce automatization, a very necessary item for a person to be able to speak a language. We should not forget that language, here considered as a set of systemic elements such as words, expressions, structures and grammar rules, must be in the background, at subconscious levels ready to be used when needed at the tense moment of real communication.

A person might be misled by a wrong interpretation of the way he learned his mother tongue. Indeed, he didn't learn it by conversation, since there is no such thing as a natural method of conversation. Before a child can speak he (she) practices a great deal, about two years of his (her) life. And what is this training about? He (she) hears a great deal, tries, errs, corrects, repeats a thousand times, tries again, makes many mistakes until he (she) can converse, that is, can maintain a conversation, using the structures of the language without having to think, considering that he (she) has to worry about what is going to be said.

Nobody has ever been able to learn to speak a foreign language without repetition. Even those or chiefly those who learn a language in the country where it is spoken meet with a large number of opportunities or repetition in the normal course of daily life and in this way the repetition exercises happen unsystematically, but there is indeed a lot of repetition. How often a person says "good morning", "til tomorrow", "how are you?", "how much", "glad to meet you", "why", "because" and so on! In fact, in order to be able to talk in a language a person needs a relatively small number of words. In a classroom, without those real repetition situations we normally have in a country where the language is spoken, it is necessary that the exercises be scientifically elaborated, to supply the real life opportunities for repetition.

## THE CLC LANGUAGE CLASS

We have been using the CLC System of Accelerative Learning since 1977 in courses at Rio de Janeiro State University. At first we had 30 students and at present we have 2700. From 80 to 90% come to the course on their friends' recommendation.

The course comprises eight periods of 48 hours each (with classes of 1.5h twice a week or 3 hours on Saturdays. We teach 8 levels in four years (each level a semester) what corresponds to a period of 7 to 8 years in traditional courses. In the inaugural session we tell the students why we can reduce 40% of the time. We tell them we have 96% of our brain reserves unexplored and we consider that this fact is due to a wrong approach, which consists in considering intelligence a function of the brain. We now know that intelligence is a mental socio-cultural function and that it can exist independently of the brain but it depends on it to manifest in the form of behaviors, of products. We also tell the students that if we know the structure of the mind and the structure of the brain, we can use this knowledge to realize our potentialities, a step which results in a reduction of time in learning/teaching.

Every teacher is given two seminars: one only about the theory of the system (why it is possible to reduce time in learning/teaching – the structure of the mind – the structure of the brain – how to develop intelligence and creativity – communication and didactics – the new role of teachers) and the other on how to use the material.

The teaching material consists of textbooks (basically with real life situations in the shape of dialogues, repetition drills especially structural drills, grammar and vocabulary). We give special rules for memorization. We also have the CLC Clinic, that is, special procedures to diagnose and treat specific difficulties students may face, such problems being basically of cognition, memory, convergent production and divergent production.

We also have audiocassettes with the real life situations in the form of dialogues and the *structural drills*, which may be used with an ordinary tape recorder. The structural drills are not mechanical. All of them are related to the dialogues.

The *Learning Speeder* deserves special mention. It is an electronic device specially prepared to help students learn more rapidly (we will speak about it later). The principle of the Learning speeder is that of audio-activity, that is, the student listens to his own voice at the moment of the utterance.

We use music in the background of the tapes, not only in order to obtain relaxation but also:

1) - *to have the message sent directly to the subconscious*. When the conscious is involved with the neutral music, the subconscious is free to



receive the message without interference of comparisons with the mother tongue.

2) - *to suppress the idea of effort*. When we want to recall a word or expression and it does not come to our mind immediately, we begin to make efforts to recall it. If a person admits: "I've forgotten" he gives the mind a negative suggestion. As long as the effect of this suggestion lasts we do not remember. As long as we make efforts to recall, we don't succeed. This fact is due to what Charles Baudouin (1922) calls "Loi de l'effort converti (Law of the converted effort) which runs: "whenever an idea is imposed on the mind to the point of triggering a suggestion, all conscious efforts made by the person in order to fight the suggestion not only do not succeed but go against the object - they activate the suggestion.

3) - *to overcome the natural resistance to learning*. There is a natural resistance to any modification. Learning involved a modification, then there is a natural resistance to learning. Learning is modifying behavior and even personality. In general, people are satisfied with their personality or, at least, they fear changes, since the way things are represents a dynamic harmony which gives a certain psychological stability."

4) - *to induce the affective atmosphere*. Whenever we want to bring a word or expression to mind we no doubt think of this word or structure, but if we do not have their mental image we don't succeed. However, if we remember certain characteristics related to the word or structure, that is, if we don't have in mind a "scheme" in which the word or structure is inserted. The "scheme" is the affective atmosphere, what the Germans express by the word *Stimmung*. It is the sensation when we say "It is on the tip of my tongue." The fact is that the mental frame, the mental scheme, the affective atmosphere is about to be completed and then we have that feeling of remembering. The music in the background induces the mental frame in which the word or structure is inserted, thus facilitating its retrieval.

We have also concluded, as a result of our researches, that we can have better learning and gain time if we avoid the intervening (interposition) of images as in the audio-visual method. Audiovisual is a trade mark and not a method. The mother tongue is a part of the psychological ego of the person and whenever you show him an object, the word it represents immediately comes to his mind, since meaning is inside the person. Words are mere signals to evoke meaning. When we teach a foreign language, the image is a superfluous means, since the student will perceive the word only when he compares it with the word in his language.

CHIEF POINTS OF THE CLC SYSTEM OF ACCELERATIVE LEARNING

1. *Emphasis on the participation of the students*  
In the inaugural meeting the students are welcomed by the general coordinator who gives a talk following the summary:
  - 1.1. Can we reduce the time of learning/teaching by 40%?
    - 1.1.1. Brain researches
    - 1.1.2. Unexplored brain reserves
2. How to use the unexplored brain reserves
  - 2.1. Mind and brain
  - 2.2. The structure of the mind
  - 2.3. The structure of the intellect
  - 2.4. The CLC SYSTEM - development of intelligence and creativity having as a first consequence the reduction of learning time
3. The CLC SYSTEM of Accelerated Learning
  - 3.1. Objectives (results)
  - 3.2. Results and communication
  - 3.3. Control (adjustment of means to results)
  - 3.4. No possibility of failure
4. Teaching resources
  - 4.1. The books
  - 4.2. Audiocassettes
  - 4.3. The structural exercises
5. Electronic resources
  - 5.1. The "Learning Speeder"
6. Teachers
  - 6.1. Recruitment and selection
  - 6.2. Training
  - 6.3. TWI
  - 6.4. Accreditation
7. Coordination
  - 7.1. The General Coordinator
  - 7.2. The English language Coordinator
  - 7.3. The German Language Coordinator

8. *Emphasis on results and communication*

2 The first item of our textbooks is a list of results *to be attained* in the period. The results are stated as functions, *Function* (from Latin *fungor*, I execute, I fulfill) is the intermediate datum between necessity and the product or service to fulfill it. Language fulfills many functions for human communication. For instance, in place of teaching how to say "thank you" we teach the students how to thank someone in English.

9. *Emphasis on structure automatization*

Our drills are related to the real life situations which begin each lesson. The aim of the structural drills is to obtain automatization. In order to be able to speak the language without stopping to think we have to automatize words, structures and how to use them in a system, and we reach this through practice with the structural drills.

10. *Emphasis on control*

Control means adjustment of means to objectives. Since we have defined results to be attained and these results are discussed with the students in the first session, we must organize our control, which consists of tests (oral understanding tests and oral evaluation), forms to be filled out by students and teachers every two lessons. Besides this we have a "quality control circle", which consists of a meeting between teacher and students at the middle of the course. In this meeting students and teacher agree on the results to be attained, discuss what they have done to the moment and what must be done to attain the results. At the end of the course, the students are invited to answer a questionnaire of evaluation of all items related to the course (coordination, secretarial means, classrooms etc.).

11. *Emphasis on system*

We have such and such results to be attained. We then organize a system (a set of interacting items to produce results) to produce the result of learning without explanation.

WHY WE DO NOT HAVE THE LABEL "AUDIOVISUAL"

In the course of our researches we have observed that the so-called "audiovisual method" is only a well-engendered gimmick for publicity effects. In reality, after the use of conceptual language has been learned, the mother tongue becomes part of our psychological ego. When meaning is attached to a word, word and object, word and situations, word and feeling become a unit. Whenever you recall the object, you have a word to express the situation or feeling. Conversely whenever you have the object, the situation or the feeling, you have stored a word for it. Words are so intimately related to what they express that it is not possible to present the object, the situation, or the feeling without evoking the corresponding words. When teaching a foreign language, whenever you present an object, a situation, or feeling to the students, the words they represent immediately come to their minds. The student never relates the words to the objects, situations or feeling directly; they relate them to *the words* of their mother tongue, what makes the intermediation of the image unnecessary.

Another reason to avoid the so-called "audiovisual method" is that meaning is inside the person. Words have no meaning; they are merely signs. In the case of language, meaning is expressed by words, expressions and the structures in which they are inserted. The so-called "audiovisual method" is based on the false premise that objects, situations, and feelings have meaning in themselves. When I show somebody a book, the person interprets it as a book because it is a member of the class of books (Upton, 1973). We get meaning from language, not from the objects. Language is the way to interpret meaning from objects, situations, and feelings and to extract meaning from such things. That is the reason why, when we show a student an object and say "book", the immediate relation is made with the word in his (her) mother tongue and not with the object.

The so-called "audiovisual method" emphasizes two types of memory, "auditive" and "visual", but we know that in the process of language learning four specialized memories are involved: "auditive", "visual", "speech memory" and "writing memory". "Audio" and "visual" are sensors; they gather data only. The auditive and the speech memory play a more important role than the visual. A blind person learns how to speak, but a deaf one has much more difficulty. That's the reason why our method is audio-oral, but the "speech memory" plays an important role. In the process of speech the oral mechanism is more involved than the visual. Of course, "auditive" and "visual" are sensors, responsible for collecting data, and without these elements we cannot produce meaning through language. But speech is sound produced by the muscular system, chiefly by those muscles of the organs of speech.

## WHY THEN THE EMPHASIS ON THE AUDIO-ORAL ASPECT

As we have seen above, of four specialized memories involved in the process of language learning, two – auditive and oral – play a more prominent part. That is the reason why our system may be described as audio-oral, since we give emphasis to hearing, speaking aloud and writing simultaneously.

The human sense most involved in language learning is hearing. It is so important that if a person cannot hear he cannot speak. A person who is born blind can learn how to speak normally. A person who is deaf by birth is also dumb. He is dumb because he cannot hear. If their muscles are not conveniently trained they do not obey the orders from the brain to produce speech.

## THE LEARNING SPEEDER

The LEARNING SPEEDER is an electronic apparatus, created by Prof. Luiz Machado, coordinator of the language laboratories of Rio de Janeiro State University (UERJ). Its principle is that of audio-activity, i.e., the student listens to his/her own voice at the very moment of utterance in real time. The "learning Speeder" is used for accelerating learning, also working as a portable language laboratory, which may be used individually or in groups. The LEARNING SPEEDER improves cognition, that operation of the intellect through which we gather data from our surroundings and the organism gives a structure to it. It is easy to understand the role of this prime operation in the process of learning, chiefly foreign language learning.

Some advantages of the use of the LEARNING SPEEDER may be pointed out: increased efficiency in the gathering of data and information, more attention and concentration, making up the affective atmosphere, increase in the ear bones' vibration, favoring the auditive feedback, prevention of suppressed sounds.

Emotion is important in everything related to human beings, (Ribot, 1898), since they are not rational but emotional; the structural exercises are indispensable since they contribute to keep the linguistic elements in the background ready for use in creative activities. As we know, *ex nihilo nihil fit*. The linguistic elements are the raw material with which we can recombine elements to express ourselves, which constitutes creativity in language learning.

After having learned his (her) native language, a person has developed his (her) muscular system, especially the muscles responsible for the production of speech which acquired the conformation of the



sounds in this language. When this person begins to learn a second language, the nervous system has to be retrained with the structural contextual exercises.

## CONCLUSIONS

Considering the two aspects involved in the learning of a language and in developing a favorable attitude towards the use of the brain reserves, we have to employ quite a few structural exercises. These structural exercises are not mechanical, devoid of meaning, but contextual exercises, so that the students can train the structures of the language and the muscular system to maintain the language for communication in the background and ready to be used. Another effect of the structural drills is that students learn without explanation. In the process of learning a foreign language if the teacher stops to explain the why's of the constructions, he attracts the students' attention to the mechanism, to the grammar rather than to what is relevant in communication.

Furthermore, structural drills follow the physiology of the nervous system. If information is taken to the brain unsystematically, the intellect will have to organize it before processing. If we give the brain information in such a way that it can be processed immediately, we gain time.

The brain can be compared to a central processing unit of a computer, or rather, a CPU can be compared to a brain, although man has never produced one of these machines which could do the work of a human brain. But let us continue with our analogy: if the programmer is not skillfull, he will produce an uneconomical program, wasting time. If the program is not good, it will spend more machine work, much more money, much more time than a more economical one with a minimum of information. The program must be in machine language. Thus, if we give the brain the language to be learned in its own language, it can process information much more rapidly, making accelerated learning possible.

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Rapport d'une expérience avec le système CLC d'apprentissage accéléré

L'auteur donne le compte rendu d'une expérience menée à l'université de Rio de Janeiro, de 1977 à 1981 et examine en détail les deux aspects de l'acquisition d'une langue: c'est-à-dire l'aspect intellectuel et l'aspect musculaire. Le contenu de cet article ouvre une nouvelle voie à l'enseignement des langues dont la principale orientation est la mémoire musculaire (ou mémoire corporelle). Un des points qui va être souligné est l'absolue nécessité de la répétition pour l'assouplissement des muscles, bien que cela implique une notion de difficulté. Cette notion de difficulté disparaît à partir du moment où les étudiants se rendent compte que la répétition est destinée à former les muscles puisque l'étude d'une langue sur le plan intellectuel est très simple. L'auteur affirme également que la conversation est un objectif à atteindre et non une méthode d'enseignement. Il s'y trouve aussi une brève description du Learning Speeder (R), un appareil électronique créé par l'auteur lui-même afin d'accélérer l'apprentissage. Le principe scientifique de cet appareil repose sur l'audio-activité; par exemple, l'étudiant entend sa propre voix au moment même de l'émission, ce qui nous permet d'atteindre le temps réel. Le "Learning Speeder" peut également servir de laboratoire portable de langues qui pourrait être utilisé individuellement ou en groupe.

Bericht über ein Experiment mit dem CLC-System für beschleunigtes Lernen

Der Autor berichtet über ein Experiment, das 1977 bis 1981 an der Rio de Janeiro Universität durchgeführt wurde. Es behandelt den Doppelaspekt vom Sprachenlernen, einen intellektuellen und einen physischen. Der Inhalt dieses Artikels eröffnet eine neue Verhaltensweise im Sprachenlernen, die das Erinnerungsvermögen der Muskeln (oder: des Körpers) als Hauptaspekt der Methodik beinhaltet. Eine der Einzelfragen, die analysiert wurde, ist die, daß die Wiederholung des Muskeltrainings unerlässlich ist, obwohl dies eventuell Schwierigkeiten beim Lernen hervorrufen könnte. Die Vorstellung von Lernschwierigkeiten wird beseitigt, sobald die Studenten wissen, daß eine Wiederholung des Muskeltrainings unerlässlich ist, da das intellektuelle Lernen einer Sprache im Grunde einfach ist. Der Autor erklärt auch, daß Konversation ein zu erreichendes Ziel sei, und keine Lehrmethode. Auch eine kurze Beschreibung des Learning Speeder (R) wird gegeben. Dies ist ein elektronischer Apparat für beschleunigtes Lernen, der vom Autor entwickelt wurde. Das wissenschaftliche Prinzip des Apparates basiert auf der Hör-Aktivität, d. h. der Student hört seine eigene Stimme gerade im Moment des Aussprechens, was ermöglicht, „Realzeit“ zu erreichen. Der Learning Speeder ist auch als tragbares Sprachlabor nutzbar, das sowohl für Individuen als auch für Gruppen gebraucht werden kann.

**Resumen:** El autor reporta un experimento que se llevo a cabo en la ciudad de Rio de Janeiro desde 1977 hasta 1981, en el mismo discute un doble aspecto en el aprendizaje de idiomas: el intelectual y el muscular. El contenido de este artículo señala un nuevo método en la enseñanza de idiomas, el cual enfatiza la "memoria muscular" (o memoria corporal). Uno de los puntos que se analiza es que la repetición es necesaria para entrenar los musculos, a pesar de que esto pueda sugerir dificultad. La dificultad se elimina cuando los estudiantes comprenden que la repetición sirve para el entrenamiento muscular ya que aprender un idioma es un proceso intelectualmente sencillo. El autor también plantea que la conversacion es una meta a alcanzar y no un método de enseñanza. También se presenta una breve descripción del "LEARNING SPEEDER"(R), un aparato electrónico, creado por el autor para acelerar el proceso de aprendizaje. El mismo se basa en el principio científico de actividad auditiva, por ejemplo, el estudiante puede hablar y oír su voz simultaneamente, lo cual permite alcanzar tiempo real. El "LEARNING SPEEDER" también funciona como un laboratorio de idiomas portátil y se puede utilizar individualmente o en grupos.

## USING SUGGESTOPEDIA IN THE ESL CLASSROOM

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### ABSTRACT

The elements of Suggestopedia may be incorporated into the ESL classroom in order to facilitate learning. In dealing with foreign students, particular attention must be paid to the choice of music, the tone of voice, and the role of the teacher. The authors outline the theory of Suggestopedia and then describe the four phases of the method. The article itself follows the Suggestopedic format. Readers can experience mind-brain stimulation as the authors' students do in their classrooms.

Faster than a native speaker . . . . More powerful than a perfect modal . . . . Able to leap complex structures in a single bound . . . . Disguised as a mild mannered student in an ESL classroom, he fights a never ending battle for modifiers, transitional expressions and syntax. Look! It's Carlos. It's Yoshi, it's Fatima . . . . it's . . . .

### SUPER STUDENT !!!

Yes, unbelievable as it may seem, your students have the potential to learn at least three times faster than their current rate of learning. An unusual combination of techniques developed by Dr. George Lozanov at the University of Sophia in Bulgaria has proved to be extremely successful in language learning. These techniques include physical relaxation exercises, suggestive principles, incorporating classical music into lessons and concentration. Students learn the new language, develop their memory skills and enjoy themselves at the same time.

Suggestopedia is based on the premise that if a student increases his memory capabilities, he will perform well not only in the classroom, but also in his whole life. When the student becomes aware of this fact, he will naturally seek to hone these skills, thus becoming even more enthusiastic about learning a language or other skill. The student enhances his own capacity to become an optimum learner in all areas of his life. "The essence of this technique is using an unusual combination of physical relaxation exercises, mental concentration and suggestive principles plus relaxing music while material to be learned is presented dynamically." (Schuster, Benitez-Bordon and Gritton, 1976).

Memory training on both local and global levels is of extreme importance. Immediate recall and overall comprehension are dealt with in Suggestopedia, but not both in the same class exercise. The student is

made aware of what exactly is being done in terms of both material presented and personal skills. Techniques used during a lesson are used not only by the teacher, but more importantly, by the students. It can thus be seen that the emphasis is shifted to the learner and the learning process. A student is ultimately responsible for himself, although the teacher remains as the catalyst between the student and communication. The teacher through Suggestopedia can guide the student into wanting to take this responsibility by encouraging him to have more faith in his own capabilities.

The teacher must take the responsibility of always being aware of the tremendous impact he has on his students, on their perceptions of the language, of learning, and of the culture. Because of this, our attitude is crucial. Are you receptive to all student responses, correct or not? Are you encouraging rather than critical, is your reinforcement through body language positive or negative? Are you ready to deal with your students' inadequacies, especially in the areas of cultural differences?

Even before entering the classroom, the teacher has a lot to do. What is your mindset concerning the material, the way you feel it should be learned, or what should be learned? Since everyone has a different learning style, and for students from other cultures, these differences are certainly accentuated. Methodology is inhibiting and we must be open to accept different cognitive styles.

Suggestopedia pays particular attention to the importance of the teacher's voice. It's necessary to vary the pitch, volume and tone: to be maternal without being whining or condescending. The role that the teacher plays in the classroom with each student is important. Some students may demand that you be an authority while others prefer to have a teacher who is more of an equal. The cultural background of your students will help determine which roles you play when, and you must remain aware of when a role needs to be changed.

For most ESL students in the United States, English is a tool to help them to some higher end. So we must always keep in mind the function and usefulness of the language, and we must always emphasize vital topics.

There are four phases to the Suggestopedic method. In the preliminary phase, several techniques are used to put the student into a receptive state for learning. It is very important that the teacher is positive about the method and about the students' ability to learn. The teacher must, through body language and voice, emanate authority. Using this authority, the teacher takes the students through some physical relaxation exercises. After the first session, this will take a minimal amount of time, 3 - 5 minutes. There are many yoga exercises that can be used at this stage.



One common exercise is Contraction/Relaxation. In a calm, quiet voice, the teacher tells the students to get comfortable in their chairs or, if possible, lie down on the floor. The students close their eyes and breathe deeply. The teacher says,

Bring awareness to the toes in your right foot, wriggle them and stretch them. Relax . . . Move up to your ankle. Rotate ankle. . . Flex calf muscles. Relax . . . Bring awareness to your thigh. Tighten it. Tighten it more, then relax . . . Shake your right leg . .

Now, become aware of your left toes. (The teacher repeats procedure for left leg.)

From left thigh, move to your right hand. Stretch your fingers and palm. Make a fist . . . Straighten and tighten your arm. Tighter. Relax . . . Remember to breathe deeply. (Repeat for left hand and arm.)

Move your awareness to your stomach. Take a deep breath and hold it for three counts. . . Stick out your stomach. Exhale rapidly and relax . . . Expand your chest. Hold it for three counts and then relax. . . Try to make your shoulders meet over your chest, holding for one breath. Exhale and relax. . . Make an ugly face . . . Move your chin in circles . . . Try to touch your lips to your nose . . . Inhale, exhale, relax . . .

You can do a short form of this, having the students tighten every muscle in their bodies and then relax several times.

After the students are physically relaxed, Pleasant Learning recall can be done, either individually or in pairs. One student is the guide and the other is the visualizer. The guide watches the visualizer to make sure he continues to breathe deeply. He also watches eye movement, as sudden moves can indicate a surfacing of the subconscious. The guide also asks questions when necessary to keep the visualization going. The visualizer relaxes and recalls a time in his past when he really enjoyed learning, any time when learning was thrilling. Everyone has had at least one of these times. When the visualizer recalls this time, he should put himself back into it. He should try to remember the dominant colors and smells. How did his mouth feel? How did his stomach feel? He should try to remember as many details as possible. The visualizer describes this to his partner. After a few minutes, they change roles and repeat. After the first session, it is enough to take a minute individually and recreate this feeling of pleasant learning. The students try to retain this feeling throughout the class.

There are many different techniques that can be used in this preliminary stage. Often a right brain exercise can be used here to get both halves of the brain working together. One quick example is Thumb Twiddling. Ask the students to twiddle their thumbs. This is usually quite easy for everyone. Next ask them to rotate one thumb forward and one backwards simultaneously. This is usually impossible at first. Have the students close their eyes and try it. After they have tried, tell them they have made a new connection in their brain. Often something as simple as this will trigger a reaction in their brain that will carry over into the learning situation.

Now the students are in a relaxed, alert state. They are ready for the next phase, presentation.

The presentation consists of two phases: active and passive. The material is presented dynamically in the active phase, using different media such as filmstrips, role-plays, wall charts, etc. Visual stimulation is very important. The passive phase consists of the teacher's dramatically reading through the material while baroque music is played. Passive refers to the students, who sit back, relax, visualize the material, and enjoy the concert.

The practice phase follows. In this stage the students apply the material they have learned. This is done in several ways. The students can create dialogues using the structures or vocabulary that was presented. Conversations in pairs or small groups can also be used to practice vocabulary or structures. At this point, it is extremely effective to use situations or topics that are of vital importance to the students. Values clarification, social problems, cross-cultural discussions become the focal point, so the student focuses on something important to him rather than worrying about his syntax.

During this phase a lot of quizzes are given. These are corrected by the students themselves and not shown to the teacher unless the student wants it. This gives each student constant feedback on how he is doing and also motivates him to improve. A final project, designed by the student, helps determine the class grade.

Other techniques used during this phase include visualizations for listening and speaking practice. When writing compositions, students seem to perform better if classical music is played in the background. It seems effective to use the same music as played during the presentation session, as it triggers memory of the material. Concerning music, the teacher may have to experiment with using music from different cultures because different language groups react differently to Western classical music. The final phase, postlude, gives the students an opportunity to write down what they have learned. It also provides feedback for the teacher and reinforcement for what the students have learned. And it's certainly a good summary exercise. The students

complete the following statements:

I learned that I ...

I realized that I ...

I re-learned that I ...

I noticed that I ...

I discovered that I ...

I was surprised that I ...

I was pleased that I ...

I was displeased that I ...

Students usually want to share these with the teacher and the class, but they should not be forced to.

At the end of any learning session it is beneficial to do a mind calming exercise. This will quiet the mind and maximize memory retention. One example of this is Zen Breathing: simply watching your breath. Try to watch your breath for five minutes. Don't change the way you are breathing, just observe. Say "In" to yourself as you inhale and "Out" as you exhale. When you find that your mind is wandering, don't get frustrated, just gently bring your mind back to watching the breath. One benefit of this is an improved ability to concentrate.

At the end of a reading session, such as now, it is beneficial to palm your eyes, this will calm your mind and relax your eyes. So take a minute now to do this exercise.

Rub your palms together briskly. You will feel a little heat. Cup your hands and place them gently over your eyes. Don't press or rub your eyes, just gently cover them. Breathe deeply. Completely blacking out all light to the eyes helps them to relax. Try to experience a feeling of soft, black velvet at the back of your eyes. Do this for as long as you like. When you finish, blink your eyes a few times quickly and notice how they feel.

### *Examples*

#### 1 - 2 STRUCTURE

#### GERUNDS

In English, certain verbs must be followed by a gerund.

- |             |                                                 |
|-------------|-------------------------------------------------|
| 1. admit    | The thief ADMITTED STEALING the money.          |
| 2. avoid    | He never AVOIDS DOING his work.                 |
| 3. consider | We're CONSIDERING TAKING a trip to Europe       |
| 4. delay    | The teacher DELAYED GIVING the exam.            |
| 5. deny     | The boy DENIED TAKING the candy from the store. |
| 6. detest   | Do you DETEST DOING your laundry.               |
| 7. dislike  | I DISLIKE EATING alone in a restaurant.         |

- |               |                                                               |
|---------------|---------------------------------------------------------------|
| 8. enjoy      | I ENJOY GOING to a restaurant with friends.                   |
| 9. finish     | We FINISHED EATING dinner and went to a movie.                |
| 10. give up   | Have you GIVEN UP SMOKING yet?                                |
| 11. keep on   | You should KEEP ON TRYING hard in your classes.               |
| 12. mind      | Do you MIND GIVING me a ride?                                 |
| 13. miss      | Khalid MISSES EATING his native food.                         |
| 14. postpone  | We POSTPONED TAKING our vacation until August.                |
| 15. practice  | She PRACTICES SPEAKING English whenever she can.              |
| 16. put off   | I never PUT OFF doing my homework.                            |
| 17. quit      | My friend has just QUIT SMOKING.                              |
| 18. recall    | I don't RECALL LEARNING my native language.                   |
| 19. recommend | I RECOMMEND WATCHING T.V. to improve listening.               |
| 20. resist    | My son RESISTS TAKING a bath.                                 |
| 21. risk      | Don't RISK LOSING your stereo by leaving your house unlocked. |
| 22. stop      | I STOPPED GOING to the disco when I had a baby.               |
| 23. suggest   | He SUGGESTED FLYING to California rather than DRIVING.        |
| 24. tolerate  | Eman can't TOLERATE BEING in cold weather.                    |

Some verbs may be followed by either a gerund or an infinitive

- |             |                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------|
| 1. attempt  | I ATTEMPTED TO LEARN Chinese.<br>I ATTEMPTED LEARNING Arabic.                                      |
| 2. begin    | It BEGAN TO SNOW.<br>It BEGAN RAINING.                                                             |
| 3. continue | I CONTINUED TO STUDY Chinese.<br>I CONTINUED STUDYING Arabic.                                      |
| 4. dread    | Many people DREAD GOING to the dentist.<br>You shouldn't DREAD TO TAKE exams.                      |
| 5. hate     | Some people HATE BEING alone.<br>Other people HATE TO BE in crowded places.                        |
| 6. hesitate | I HESITATE TELLING my husband about my accident.<br>I HESITATE TO SPEND a lot of money on clothes. |
| 7. like     | I LIKE SWIMMING.<br>Hide LIKES TO SKI.                                                             |
| 8. love     | Luz LOVES EATING French food.<br>Khalid LOVES TO WALK in the rain.                                 |
| 9. neglect  | Don't NEGLECT STUDYING on the weekend.<br>Don't NEGLECT TO WRITE home often.                       |
| 10. plan    | He PLANS ON ENTERING the university next semester.<br>She PLANS TO RETURN home next semester.      |
| 11. prefer  | I PREFER TRAVELLING with a friend.<br>Greta Garbo PREFERRED TO BE alone.                           |

- |           |                                                                                                           |
|-----------|-----------------------------------------------------------------------------------------------------------|
| 12. start | She <b>STARTED STUDYING</b> English 2 months ago.<br>He <b>STARTED TO STUDY</b> English last year.        |
| 13. try   | <b>TRY SPEAKING</b> English as much as possible.<br><b>TRY TO REMEMBER</b> these gerunds and infinitives. |

Gerunds as objects of prepositions in certain expression.

- |                    |                                                                                     |
|--------------------|-------------------------------------------------------------------------------------|
| 1. look forward to | I'm <b>LOOKING FORWARD TO TAKING</b> a vacation soon.                               |
| 2. interested in   | I'm <b>INTERESTED IN STUDYING</b> history.                                          |
| 3. tired of        | We are all <b>TIRED OF WEARING</b> winter clothes.                                  |
| 4. insist on       | Some people <b>INSIST ON DOING</b> everything by themselves.                        |
| 5. afraid of       | I'm <b>AFRAID OF GOING</b> To the dentist.                                          |
| 6. capable of      | My class is <b>CAPABLE OF LEARNING</b> all the gerunds.                             |
| 7. responsible for | Who is <b>RESPONSIBLE FOR STARTING</b> the war?                                     |
| 8. guilty of       | Argentina says England is <b>GUILTY OF INVADING</b> their country.                  |
| 9. worry about     | Don't <b>WORRY ABOUT MAKING</b> a mistake.                                          |
| 10. succeed in     | All the students will <b>SUCCEED IN PASSING</b> their exams.                        |
| 11. prevent from   | The storm <b>PREVENTED us FROM GOING</b> on a picnic.                               |
| 12. accuse of      | The official was <b>ACCUSED OF TAKING</b> money from the government.                |
| 13. suspect of     | I <b>SUSPECT</b> my roommate <b>OF LOOKING</b> through my things when I'm not home. |

Certain **SENSORY** verbs may be followed by either **-ING** or **BASE FORM**.

- |           |                                                                                                                      |
|-----------|----------------------------------------------------------------------------------------------------------------------|
| 1. feel   | I <b>FELT</b> the wind <b>BLOWING</b> .<br>I <b>FELT</b> an insect <b>CRAWL</b> over my foot.                        |
| 2. hear   | I <b>HEARD</b> the birds <b>SINGING</b> .<br>I <b>HEARD</b> the baby <b>CRY</b> .                                    |
| 3. notice | I <b>NOTICED</b> the students <b>LOOKING</b> in their notes.<br>I <b>NOTICED</b> the pretty girl <b>LOOK</b> at him. |
| 4. see    | I <b>SAW</b> the boys <b>PLAYING</b> ball.<br>We <b>SAW</b> the car <b>HIT</b> the bicycle.                          |
| 5. smell  | Can you <b>SMELL</b> the cigarette <b>BURNING</b> ?<br>Can you <b>SMELL</b> the dinner <b>COOK</b> ?                 |
| 6. watch  | He <b>WATCHED</b> the girls <b>WALKING</b> on the mall.<br>She <b>WATCHED</b> him <b>GET</b> out of his car.         |



Causatives are followed by a (pro)noun plus a base form.

- |         |                                                        |
|---------|--------------------------------------------------------|
| 1. make | His mother MADE him COME home early.                   |
| 2. let  | The teacher doesn't LET us USE our books during tests. |
| 3. have | I HAD the mechanic FIX my car.                         |

HELP may be followed by either a BASE FORM or an INFINITIVE.

- |         |                                                                                  |
|---------|----------------------------------------------------------------------------------|
| 1. help | Eman's husband HELPED her CLEAN the house.<br>She HELPED him TO DO his homework. |
|---------|----------------------------------------------------------------------------------|

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Schuster, Bordon, R. & Gritton, C. *Suggestive Accelerative Learning and Teaching: A Manual of Classroom Procedures Based on the Lozanov Method*. Des Moines, Iowa: S.A.L.T., 1976.

Des éléments de la Suggestopédie peuvent être incorporés à l'enseignement de l'anglais langue seconde afin de faciliter l'apprentissage. Lorsqu'on enseigne des étudiants étrangers dans la salle de classe, il faut faire très attention au choix de la musique, au ton de la voix et au rôle que joue le professeur. Les auteurs résument la théorie de la Suggestopédie et décrivent ensuite les quatre phases de cette méthode. L'article lui-même suit le format suggestopédique. Le lecteur peut avoir les mêmes expériences que les étudiants des deux auteurs dans la salle de classe en ce qui concerne des exercices de relaxation mentale, des exercices pour faire rappeler une expérience agréable de l'apprentissage et des exercices pour stimuler l'hémisphère droit du cerveau.

Die Bestandteile der Suggestopädie lassen sich im ESL (Englisch als Fremdsprache) Unterricht einsetzen, um das Lernen zu fördern. Wenn man ausländische Studenten unterrichtet, muß man Gewicht auf die Berücksichtigung der Musikwahl, Klang der Stimme und die Rolle des Lehrers legen. Die Autoren geben einen Überblick der Theorie von Suggestopädie und beschreiben anschließend die vier Phasen der Methode. Der Artikel selbst folgt dem suggestopädischen Format. Der Leser kann geistesberuhigende Übungen, Erinnerung an

angenehmes Lernen, und den Anreiz der rechten Gehirnhälfte erleben, so wie die Studenten der Autoren es im Klassenzimmer erlebt haben.

Resumen: Los elementos de la Sugestopedia pueden ser incorporados dentro del salón de clase donde se enseña inglés como segundo idioma, con el propósito de facilitar el aprendizaje. Al enseñar a estudiantes extranjeros se debe prestar atención a la música escogida, al tono de la voz y al papel que juega el maestro. El artículo en sí sigue el formato sugestopédico. El lector experimentará ejercicios mentales relajantes, recordará experiencias de aprendizaje placenteras y experimentará estimulación del hemisferio derecho del cerebro, al igual que experimentan los estudiantes de los autores.

**Some Preliminary Experiments with SALT Techniques:  
Music and Exercises, Paired-words and Narrative  
Word-types, and Meaning Checks**

by Loren Alexander  
Kansas State University

**Abstract**

Several small-scale vocabulary retention experiments in college beginning German led to results that indicate improved retention when words are in sense-pairs without visualization cues, when one uses a printed rather than an oral translation, and when words are nouns in contrast to other word-types. Meaning checks may influence the perception of results when they are foreign-language-to-mother-tongue rather than mother-tongue-to-foreign-language. Baroque music, relaxation exercises, and nonthreatening grading created a positive atmosphere, but showed no accelerated learning.

Due to a deep interest in, but also a lingering skepticism about the claims of Lozanov (1978) and later SALT researchers,<sup>1</sup> the direction of the author's efforts to check out the claims has been a cautious implementation of various SALT techniques in the teaching of German. A first pilot investigation with one small word-list, relaxation exercises, and timing plus intonation integrated with meaning was made in a third-year German class in the spring of 1980. One-half of the class got all words correct on the posttest; the other half got a variety of scores down to very few. This pilot effort convinced the author that students could learn much more in a given amount of time than he had thought, that physical exercises may have something to do with this, that timing the items encourages focused attention on the task at hand, and that both the students and the professor could perhaps become more comfortable with such procedures.

The author spent a year in Germany working on other projects. Upon his return, he was prepared to give more time to trials of some of the tenets of SALT. A comment to a colleague, a professor with extensive experience in biofeedback research, led to a noon "brown-bag" discussion group focusing on the developments in SALT. A small demonstration experiment with this group conducted by the author after his return from Germany gave the anticipated results; in a few minutes the members of the group learned approximately 20

<sup>1</sup>D. Schuster, W.J. Bancroft, O. Caskey, C. Gritton, R. Borden, and R.A. Prichard, are a few of the leading writers on SALT and Suggestology who are not in the accompanying bibliography.

German words to a 94% level, and scored 85% the following week, during which time they did not look at or think about the list. One person's score improved during the week; this is an example of the Poetzl effect.<sup>2</sup>

These mini-studies resulted in a more systematic series of pilot studies, with a goal of searching for tendencies rather than to conduct a full-scale investigation with controls and statistically firm data. Thus, SALT techniques were implemented to a small degree in two semesters of a beginning German course in 1981-82. The results of ten brief experiments are reported here.

These ten experiments produced identifiable tendencies in four areas: 1) Relaxation techniques and Baroque music, 2) Words in sense-pairs with and without contextual visualization cues, 3) Types of words, and 4) FL-MT (Foreign-language- to mother-tongue) vs. MT-FL meaning checks. More elaborate experiments with controls and a search for statistically proven or disproven hypotheses are reserved for the next academic year.

### *Review of the Literature*

The review of the literature is divided into the four areas of identifiable tendencies in the results of the ten experiments that will be described in this paper.

1) Music and relaxation: Much of the research as well as popular attention on SALT focuses on the music and relaxation techniques, which gives one the impression that these two factors are the crucial elements for accelerated learning. The author, too, became imbued with the idea that these two elements were the basis of SALT. The results of research and the claims of various practitioners, however, indicate otherwise.

Lehman (1973) wrote that music may penetrate the subconscious even when the person is not consciously aware of it, thus affecting one's openness to information. This could, if proven, help set music in the category of memorization-enhancing. However, Dupre and Nathan (1911) saw the only purpose of music to be to distract the mind from other matters. This would be a salutary factor in a learning setting, but not a cause and effect relationship with increased memorization. In a questionnaire on students' reactions to music and relaxation in my class, one student's response supports this freeing of the mind: Question: "Do you think you learn better and faster this way?" Answer: "Yes, because I am more relaxed and my head is clear." This reaction was shared by most of the students in this class.

<sup>2</sup> The Poetzl effect, as referred to in Shaffer (1979) is the verified phenomenon of an increase in recall over a specific span of time.

Lozanov (1978) stated that accelerated learning does not require physical relaxation, and his own data showed that memorization is not enhanced by the concert session. However, when the music was not a part of the procedure, the students indicated that they preferred the passive session, "since then their rest was more profound and what they memorized was more lasting." (Lozanov, 1978, 17).

Biggert and Stricherz (1976), Kline (1976) and Shaffer (1979) found no enhancement of memorization with music or relaxation.

Bancroft reported a conversation with Mme. Forget, a yoga specialist, who maintains that the style of breathing and of the reading of the text are the crucial factors in increased memorization in the Lozanov approach. (Reported in Shaffer, 1979, 185)

Racle (1979) discussed the importance of music as a placebo, and its effectiveness as one element in a complex system. He emphasizes the fact that this is in line with Lozanov's theory.

Cooter (1980) adds whole musical compositions as the basis for the concerts in Suggestopedia. His emphasis on patterning of the readings apparently becomes more important than the music.

We should perhaps not anticipate positive results from isolated experiments with only music or relaxation. However, Schuster, who is presently studying the effect of music on vocabulary learning, can perhaps shed some light on this problem.

2) Sense-pairs: There appears to be a lack of research in SALT on lists of words in sense-pairs alone (paired associates) or together with words in context.

3) Types of words: Ganovski (1975) looked at the responses to types of words: Nouns, adverbs, verbs, and adjectives. Nouns proved easiest to learn, and of the three other types, adjectives responded most to the procedure with intonation and music. This could provide instructors of languages with information on the degree of emphasis to give to each type in order to create balance in the selection of vocabulary and in the determination of type of learning situation for various language problems.

4) Meaning checks: As for the meaning check, there is an apparent assumption in much of the literature that one checks meaning with FL-MT. Lozanov (1978, 18-19) did report a Bulgarian-to-French check, which indicated somewhat less facility than the reverse. If we are interested in generating foreign language communication skills, the specification of type of meaning check could be of interest to later researchers. Widdowson's (1978) analysis of language as communication contributes much to a clearer understanding of this often neglected facet of teaching.

Shaffer's (1979) contention that lowered CO<sub>2</sub> levels in the blood due to controlled breathing contribute most to accelerated learning was



not investigated here, but should be worth pursuing. This could support Forget's implication of the style of breathing and reading as the crucial factors in accelerated memorizing. However, see Wenger (1975) for a counter-contention: Elevated CO<sub>2</sub> levels through head masking exercises lead to expanded arteries and opens the carotid valves to the brain, resulting in a higher level of blood to the brain.

### *Procedure*

Each of the ten tests was a brief part of a regular class session. To the extent possible, a non-threatening SALT atmosphere was a part of the entire course; however, departmentally scheduled chapter exams, the stark physical setting, and several other factors precluded an optimum implementation of SALT techniques.

Table 1 shows the variety of procedures that were used in the experiments. This was an attempt to give these procedures a trial run to gather information and experience with SALT, rather than to generate viable statistical support through control groups and controlled conditions. The results will be of interest to others in similar settings, and to researchers with an interest in accelerated learning of foreign languages.

Anonymity of response was maintained by having the students invent a sign, through which each one alone could identify his or her score in the reported results.

Each reading of a wordlist and/or text was time, i.e. approximately 8 seconds for a word-pair with translation, and 15 seconds for a word-pair with visualization cue. Sessions with music allowed a few bars for the establishment of mood before the beginning of the reading and a few bars afterward to allow a gradual shift back to a non-session activity. Pre- and posttests were given immediately preceding and following the session. All music was Baroque slow movements; exercises were both body movement and tension-release. Word-lists were derived from the chapter being introduced that day. The reading text of Tests 4, 5, and 6 was introduced prior to the tests, thus the relatively high pretest scores.

### *Results*

In Group I on the chart three tests were given to the same students in the first semester German course. Music and relaxation techniques were used in Tests 1 and 2, but were omitted in Test 3. The maintenance of 40-plus percent net gain (acquisition of items not known in the pretest) in Test 3 indicates that music and relaxation may not be critical elements. If they are, then these factors have not begun functioning at peak level.

The omission of the visualization cue in Test 2 may have

contributed to the higher scores in this test (Test 1: 29%, 32%; Test 2: 33%, 54%), but other factors, such as the developing confidence in the language, increased rapport in the classroom, etc. may explain this gain. The highest posttest average of scores in Group I of 70% for nouns in Test 2 appears to be a clear indicator. Gender of nouns, of which there are three generally arbitrarily assigned forms in the German language, is notoriously a problem area for learners of the language, and follows true here with lower scores in posttest percentages in contrast to the nouns themselves.

Group II is three tests on variations of the conditions in one session. The subjects are a new class of students in the second semester; only four students carried over from first semester. A reading selection was divided into three parts at natural breaking points in the content. The words that were selected for testing were emphasized only in the pretest, i.e., there was merely a reading of the text during the session, with accompanying variations of the form of translation. Test 4 used a written translation with the German text, Test 5 an oral translation, and Test 6 an oral translation upon request.

The variations in form of translation resulted in a loss of percent net gain for each successive change. The part with printed translation generated the highest net gain (45%), contrasting with oral translation (40%), and with oral translation upon request (37%). Although music was omitted again, and relaxation retained, the scores show no contrast to Group I. The early point in the new semester could perhaps suppress some net gain from these factors due to the general lack of acquaintance with the techniques and the new professor.

Group III, four tests at the end of the second semester, yielded some interesting results. Test 7 indicates that the meaning of nouns is retained at a very high level (93%). This was corroborated by a quick review of earlier chapters, in which noun-meaning was given German-English; this resulted in an average of 98% retention of meaning (not included in the chart here).

Test 8 had two parts, in that a visualization cue in the first half of the list showed no difference from the last half without visualization cues; thus no split scores are entered here. The lower score of Test 8 (75%) from Test 7 (93%) may be attributed to testing other words in contrast to nouns. The change in type of meaning check appears to yield only part of the difference shown here, as may be seen in the result of comparison of Test 9 to Test 7.

Test 9 parallels Test 8 in meaning check and word-pairs. The rise in net gain (75% - 83%) can be surmised to be due to the variance in word-type: mixed words (nouns plus other words) versus other words (no nouns). Thus one sees a pattern: nouns 93%; mixed 83%; and other words 75%.

Test 10 was an attempt to work with full sentences representing key forms of a new grammatical function, namely passive voice. Each sentence was assigned a two-point value for accuracy of grammar, syntax and spelling. The author's assumption concerning the low net gain (36%) is that the difficulty of introducing a new grammatical concept in a partially deductive manner either does not suite the SALT session or must be handled quite differently from the classical procedure.

### Conclusions

1) Relaxation techniques and Baroque music assisted the attempt to develop an atmosphere that is characteristic of SALT, but, as indicated in some previous research, apparently had no direct effect on memorization. The situation is unclear.

2) The students seemed to learn better without visualization cues, which may have something to do with freeing the learner to create images or mental connections that correlate better with that person's own experience and knowledge. Restriction to an instructor-generated connection or context may bring about less learning or even negative results. The implications here are manifold; there is room for much research. Community Language Learning (Curran, 1961 & 1972) could offer suporting evidence of the effect of freed context.

3) To few language instructors' surprise, nouns appear easiest to learn. Ganovski's results are partly supported. There are implications for the writing of materials in this aspect of language learning.

4) There is apparently an observable difference in skill development between the generation of the native meaning of a foreign word from the memory, and the generation of the foreign word when the native term is supplied. As with Lozanov's early experiments, this factor became evident here. Subsequent research in accelerated learning of foreign languages should carefully indicate the type of meaning check.

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TABLE 1

CONDITIONS AND OUTCOMES OF TEN PRELIMINARY  
EXPERIMENTS ON BALT TECHNIQUES IN COLLEGE  
ENGINEERING GERMAN, 1961-62

| TESTS                     | CONDITIONS |            |           |          |     |        |       |       |           |           |           | OUTCOMES   |          |                  |              |             |              |              |             |
|---------------------------|------------|------------|-----------|----------|-----|--------|-------|-------|-----------|-----------|-----------|------------|----------|------------------|--------------|-------------|--------------|--------------|-------------|
|                           | Audio      | Relaxation | Word-pair | Vis. Cue | Mem | Gender | Other | Mixed | Sentences | Ger.-Eng. | Eng.-Ger. | Time       | Subjects | Pre-Test         | Post-Test    | \$ Pre-Test | \$ Post-Test | Point Gain   | \$ Net Gain |
| GROUP I (1st Sem.)        |            |            |           |          |     |        |       |       |           |           |           |            |          |                  |              |             |              |              |             |
| Test 1. Chapters 1,2      | X          | X          | X         | X        | X   | X      | -     | -     | -         | -         | X         | 102        | 23       | 0 18.6<br>M 38.1 | 42.9<br>58.6 | 18<br>37    | 42<br>57     | 24.3<br>20.5 | 29<br>32    |
| Test 2. Chapter 3         | X          | X          | X         | -        | X   | X      | -     | -     | -         | -         | X         | 76         | 21       | 0 15.8<br>M 26.4 | 40.6<br>53.0 | 21<br>35    | 53<br>70     | 24.8<br>26.6 | 33<br>34    |
| Test 3. Chapter 6         | -          | -          | X         | X        | -   | -      | -     | X     | -         | -         | X         | 86         | 20       | 19.3             | 47.3         | 22          | 55           | 28.0         | 42          |
| GROUP II (Eng. 2nd Sem.)  |            |            |           |          |     |        |       |       |           |           |           |            |          |                  |              |             |              |              |             |
| Lines of a reading:       | -          | X          | win.      | -        | -   | -      | X     | -     | X         | -         | -         | 30         | 16       | 17.1             | 22.7         | 57          | 76           | 5.8          | 45          |
| Test 4. Lines 1-30        | -          | X          | oral      | -        | -   | -      | X     | -     | X         | -         | -         | 19         | 16       | 8.9              | 12.9         | 47          | 68           | 4.0          | 40          |
| Test 5. Lines 31-49       | -          | X          | req.      | -        | -   | -      | X     | -     | X         | -         | -         | 23         | 16       | 9.9              | 14.9         | 43          | 65           | 4.9          | 37          |
| Test 6. Lines 50-72       | -          | X          | req.      | -        | -   | -      | X     | -     | X         | -         | -         | 23         | 16       | 9.9              | 14.9         | 43          | 65           | 4.9          | 37          |
| Lines 1-72                | -          | X          | req.      | -        | -   | -      | X     | -     | X         | -         | -         | 72         | 16       | 35.9             | 50.6         | 50          | 70           | 14.6         | 40          |
| GROUP III (Eng. 2nd Sem.) |            |            |           |          |     |        |       |       |           |           |           |            |          |                  |              |             |              |              |             |
| Test 7. Chapter 12-A      | -          | X          | X         | -        | X   | -      | -     | -     | -         | X         | -         | 10<br>(40) | 14       | 4.6              | 9.6          | 46          | 96           | 5.0          | 93          |
| Test 8. Chapter 12-B      | -          | X          | X         | X/-      | -   | -      | X     | -     | -         | -         | X         | 10<br>(40) | 14       | 0.8              | 7.7          | 8           | 77           | 6.9          | 75          |
| Test 9. Chapter 13-A      | X          | -          | -         | -        | -   | -      | -     | X     | -         | -         | X         | 10<br>(40) | 13       | 4.1              | 9.0          | 41          | 90           | 4.9          | 83          |
| Test 10. Chapter 13-B     | X          | -          | -         | -        | -   | -      | -     | X     | -         | X         | -         | 10<br>(40) | 13       | 0.6              | 4.0          | 6           | 40           | 3.4          | 36          |

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Quelques expériences préliminaires avec des techniques de SALT: musique et exercices; mots par paires et narration; types de mots; vérification du sens. Plusieurs expériences mineures de mémorisation de vocabulaire dans des classes d'allemand pour débutants (niveau collège) ont produit des résultats qui indiquent que la rétention s'améliore quand les mots se présentent par paires ou synonymes mais sans image; quand on emploie une traduction écrite plutôt qu'orale; et quand les mots en question sont substantifs en contraste avec d'autres parties du discours. La vérification du sens peut avoir une influence sur la perception des résultats quand il s'agit d'une traduction langue étrangère/langue maternelle plutôt que langue maternelle/langue étrangère. La musique baroque, des exercices de relaxation et un système de classification des étudiants non décourageant ont créé une atmosphère positive mais n'ont pas contribué à une accélération de l'apprentissage.

Einige vorläufige Versuche mit SALT-Technik: Musik und Gymnastik; Wortpaare und Bericht; Wort-Arten; und das Überprüfen der Bedeutung von Wörtern. Im Anfängerkurs für die deutsche Sprache führten einige vorläufige Versuche über das Behalten von Vokabular zu Resultaten, die auf ein verbessertes Erinnerungsvermögen hinweisen, wenn die Wörter in Sinnespaaren ohne äußerliche Beeinflussung auf innere Vorstellung sind, wenn man eine gedruckte statt einer mündlichen Übersetzung benutzt, und wenn Wörter im Kontrast zu anderen Wortformen Nomen sind. Das Überprüfen der Wortbedeutung kann die Wahrnehmung der Resultate beeinflussen, wenn es sich um die Form Fremdsprache-Muttersprache handelt, statt umgekehrt. Obwohl Barockmusik, Entspannungsgymnastik, und ein Einschätzsystem ohne Verunsicherung des Einzelnen eine positive Atmosphäre schufen, zeigten diese Hilfsmittel jedoch kein beschleunigtes Lernen.

ALGUNOS EXPERIMENTOS PRELIMINARES UTILIZANDO LAS TECNICAS DE SALT: MUSICA Y EJERCICIOS; PALABRAS EN PAREO Y NARRATIYA; CLASE DE PALABRAS; Y VERIFICACION DE SIGNIFICADO POR LOREN ALEXANDER

Varios experimentos en pequeña escala de retención de vocabulario conducidos en los cursos básicos de Alemán a nivel universitario dieron resultados que indican mejor retención cuando las palabras están pareadas por su sentido y sin indicaciones visuales; cuando se utiliza una traducción escrita en vez de una traducción oral; y cuando las palabras son nombres en contraste con otro tipo de palabras. La verificación del significado puede influenciar la percepción de los resultados cuando son del idioma que se está adquiriendo a la lengua materna en vez de cuando son de la lengua materna al idioma que se está adquiriendo. La música barroca, los ejercicios de relajamiento, y un sistema de calificación que no era amenazante crearon un ambiente positivo pero no demostraron aceleración en el aprendizaje.

## **Accelerative Learning Techniques for Self Concept Enhancement**

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### **ABSTRACT**

Thirty of 97 students in introductory psychology classes who scored lowest on the Total Positive Score of the Tennessee Self Concept Scales (TSCS) were randomly selected into two control and one treatment group of ten each. Group A, the treatment group received two one-hour relaxation training sessions. Group members met individually with a counselor for three one-half hour sessions and in group meetings for five one-half hour sessions. Treatment sessions were designed to help individuals learn to feel more positively about themselves in specifically and individually selected resolutions for change. The process was based on suggestopedia techniques. One control group received two one-hour relaxation training sessions along with the treatment group. Another control group received no treatment. Pre-posttest change showed that the treatment group had gained in their Total Positive Scores on the TSCS over the control groups at .005 and .001 levels of confidence. The need for replication was noted as well as pertinent questions regarding components of the treatment process.

Self concept change and, more specifically self concept growth, is anticipated, hoped for, and assumed as counselors and psychotherapists engage clients in various strategies for change and growth. Self esteem or self concept growth may not be the direct end sought. It is, however, assumed to be a by-product, not a necessary concomitant of the outcome of therapy.

Goldstein (1971) has suggested that even though therapists have the intention of reaching certain goals, specific methods aimed at achieving specific goals are often missing. Friedenberg and Gillis (1980) argue that increasing self respect is a valuable as well as necessary precondition for desired therapy outcomes such as assertiveness and improved social interactions. Fitts (1972) has gone so far as to suggest a general hypothesis:

...in general, and other things being equal, the more optimal the individual's self concept the more effectively will he function. (p. 4)

Burke and Reitzes (1981) argue that performance and self concept

are directly and reciprocally integrated - that the self is operative in choosing behaviors which then reinforce and support self. Fitts' (1972) hypothesis referred to above may have a reciprocal: the more effectively an individual functions the more optimally will he perceive himself. Were this so, intervention might be possible at any point in the apparent loop. The quest for efficacy then leads one to question whether behaviors or attitudes about self are more amenable to therapeutic alteration.

Therapists could approach desired outcomes of therapy much more directly by attempting to bring about any necessary preconditions and then helping the client to orchestrate his attitudes and behaviors toward more effective living. Perhaps it will prove to be more efficient to work more directly to accomplish certain preconditions intermediary to the gross behavior changes desired.

Throughout Ostrander, Schroder and Ostrand's (1979) book *Superlearning*, direct and indirect assertions are made that the general well being, and more specifically, the psychological well being is enhanced as students participate in "superlearning." In the first chapter Ostrander, et al (1979) state

...and people testified, not only had they learned a whole language in a month or a semester of history in a few weeks, they had rebalanced their health and awakened creative and intuitive abilities while they were learning their facts. (p. 16)

These kinds of words lead one to question other potentials that might be inherent in the processes used so effectively to enhance learning. What could a system of learning that speeds the process five to fifty times traditional learning rates do for counseling and psychotherapy? Indeed the question, upon closer scrutiny, might be turned around to "what could psychotherapy or its methods contribute to learning?"

In a section headed *Suggestopedia Begins*, Ostrander et al (1979) indicated that Lozanov attributed some of the new system's success to psychotherapeutic methods;

The system he envisioned would have two parts: a session for developing supermemory while people are fully conscious: a new way of teaching to go with it. Teaching would include psychotherapeutic methods such as self image therapy and affirmations. The whole system would enhance the whole personality. It would feature learning without stress. It would be a teaching method that would not bring on illness, but instead cure

them. (pp. 30-31).

Ostrander et al (1979) as they refer to Lozanov's public announcement in the early sixties about the success of suggestopedia, say that "it worked for the old or young, brilliant or retarded, educated or uneducated. On top of it all the method appeared to improve health and cure stress related illness." (p. 33) and "students returned on their own too, to say how much their emotional well being had improved from the courses." (p. 34)

Quoting Lozanov, (Ostrander et al, 1979) he makes the point again, "students from our earlier classes came back to the institute regularly to tell us it was the happiest time of their lives.

The process, suggestopedia, is apparently loaded with therapeutic effect. One of those effects that is most apparent is improved self concept. After all, the discovery that one is capable of learning five or ten times faster than he/she had thought possible would be a powerful ingredient to attitude change.

## Method

This study was designed to show that suggestopedic-like processes could be used to enhance the self esteem of college students who were at or below the 33rd percentile of their respective psychology class peers. Two control groups were used; a no treatment group and a relaxation training control-group.

It was hypothesized that the average Total Positive Score on the Tennessee Self Concept Scale (TSCS) for the treatment group would increase while the average score for the two control groups would remain the same. In addition, it was hypothesized that the Quality Point Average (QPA), exclusive of introductory psychology grades, of the treatment group would increase during the current quarter over the previous quarter while remaining the same for the two control groups. It was possible that the treatment group's psychology grades would be inflated over those of the control groups because of the differential extra credit given.

Two introductory psychology classes, totaling 97 students, were tested with the Tennessee Self Concept Scale (TSCS). The 30 low scoring students on the TSCS Total Positive Score were offered the opportunity of earning extra credit by becoming involved in a research project. All 30 students were told that three groups of 10 students would be randomly selected; that each group would be involved at different levels and that commensurate levels of credit would be given for their involvement. They were further told that credit could be

assured only with completion of all requirements for their respective groups.

The no treatment control group members were dismissed with assurance that the researchers would be in touch with them at a later date for completion of their work. The combined treatment and relaxation training control groups were assigned a time to appear at the university counseling center for relaxation training. The time chosen was two - one hour time slots within one week when no classes were scheduled.

Progressive deep muscle relaxation training was given to nineteen students on a Tuesday and Thursday of one week with instructions to practice on their own for at least two practice sessions after each training session. One student was unable to attend the group sessions and was given the training individually in the same week. Following relaxation training session 2, a short lecture about effective application of the skills was given to all twenty students. Use of relaxation skills for headache control, insomnia, stress monitoring, and general anxiety was described and encouraged.

At the end of the second relaxation training session the ten students comprising the experimental group were notified that they had been randomly selected to continue with further work.

At the following Tuesday meeting the senior investigator, who had given the relaxation training sessions, gave a briefing session. A brief overview of the main concepts of the book *Superlearning* (Ostrander, et al, 1971) were reviewed. The various components of suggestopedia (relaxation, music, timed breathing and rhythmic presentation of learning bits) were described as well as success stories from the book. The author then described how he felt that there was substantial evidence that the suggestopedic process enhanced self esteem and that he had devised a system to use these principles in helping them to improve their self concepts. The students were advised that the group would meet twice weekly except on weeks when individual sessions were scheduled. They were reminded again that unless all assignments were fulfilled, no credit could be given. The group was then advised that they could withdraw and receive commensurate credit or choose to go on for further work. All 10 students chose to continue.

Three sessions of one half hour each were scheduled for each of the experimental group subjects. During session one, students were invited to make a list of things they would like to change about themselves and were instructed to make a statement for each item similar to "I can exercise regularly" or "I can study more." Two copies of the lists were made. One was kept by the researcher and one by the student, who was asked to memorize the list. Lists varied in number of items from seven to 12 and included items dealing with assertiveness, weight control,



exercise, study, getting along with others, being comfortable in groups, being comfortable alone, etc., etc.

At individual session number two, students were given time to get relaxed in a recliner. The first suggestotherapy session, consisting of each self concept statement as a learning bit, was presented rhythmically in varied voice tones (bold-assertive, confidential whisper, normal) with classical baroque music in the background. Each self concept bit was presented three times in a random voice tone presentation. At the end of each series of presentations, subjects were invited to go into their relaxation scenes (learned during relaxation training sessions) and imagine how they would feel if they were successful in achieving their learning bits. They were allowed to remain for about one minute in relaxation scenes before re-energizing and being dismissed.

At individual session number three, the same procedure was followed. At the end of the session, the researcher explained that they were invited to change the wording of any learning bit from the "I can...." format to "I am....". They were cautioned not to change their statements in such a manner until their commitment to back up statements with actions were strong.

Subsequently, five group sessions were held in which the process allowed for individuals in the group setting to work on their unique list of self concept learning bits. Each student had memorized his/her list of self concept learning bits. Five minutes were allowed at the beginning of each session for relaxation. The same classical baroque music was played throughout each session. After relaxation had been attained and students were breathing appropriately, they were instructed to repeat their learning bit #1 to themselves in the same tone of voice being used by the experimenter. At appropriate timing instruction was given to repeat their learning bit #2 to themselves, etc., through 12 presentations. Students with less than 12 learning bits were invited to repeat any learning bit they wished or to go into their relaxation scene. At every session students ended the process in their relaxation scenes visualizing and imagining their successes in changing their self concepts.

Students met for two one-hour sessions of relaxation training, three one-half hour individual sessions, and five one-half hour group sessions. The senior researcher, who made all of the treatment contracts, interviewed each student in the treatment group at the end of the quarter after TSCS post testing to debrief and to interpret changes in TSCS scores. A very brief four-item questionnaire was also completed by each student in the treatment group. Posttesting of the TSCS was administered in the classroom by the two faculty members who had administered the pre-test.

## Results

Expectation according to the first hypothesis offered was that the Total Positive Score on the TSCS would increase for the treatment group, but not for the control groups. These expectations were confirmed at or beyond the .005 level of confidence. The change in Total Positive Score of the TSCS were: 3.70 between groups A and C; 4.20 between groups A and B.

TABLE 1

Means, Standard Deviations and t values on change in Total Positive Scores TSCS

| Group           | Mean | SD    | t value between<br>Group A and |
|-----------------|------|-------|--------------------------------|
| A, experimental | 36.2 | 20.46 |                                |
| B, relaxation   | 4.3  | 12.32 | 4.25**                         |
| C, control      | 5.9  | 15.73 | 3.69*                          |

\* $P < .005$ .

\*\* $P < .001$ .

Expectations according to the second hypothesis offered was that a comparison of grades earned (excluding psychology) during the research quarter by the treatment group would increase from the previous quarter while there would be no such increase for either control group. These expectations were not confirmed.

## Discussion

It appears evident that the treatment offered and apparently accepted by treatment group members had a highly significant effect. Although not included in the hypothesis, analysis of change on all TSCS eight subscores (Rows 1, 2, and 3 and Column A, B, C, D, and E) indicated significantly greater change in treatment group A than in control group B at or beyond the .05 level of confidence. Treatment group A also changed significantly more than group C on five of the eight sub-scores.

A review of individual profiles of the ten members of the treatment group revealed one student who made, practically speaking, no change, while all nine other students appeared to make appreciable gains. The test profile for one student appeared phenomenal, with a total positive score gain of 79 points.

The lack of change in quality point averages indicates the

possibility of lag time between changes in self concept and changes in behaviors. It is also likely that, for at least some students, an improved self concept may not necessarily lead ever to better grades. Some other means of measuring the general well being needs to be used in future research in an effort to discover if and how soon changes in self esteem result in changes in behaviors or behavior patterns.

The research obviously needs to be replicated, not once but perhaps many times, until substantial evidence accumulates.

Questions present themselves now for answering: Is the music necessary? Is the timing important? Are the voice intonations really crucial? Could the same be accomplished in three fourths, or one half or one third of the time? Could there be some way to accomplish greater gains? How important is that first session for the treatment group, from the perspective of convincing students that they can change? Can this be the threshold of a new therapeutic approach - suggestotherapy?

All these questions are interesting or even fascinating. None of them, however is as important at this point as this: Can similar results be produced again?

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Des techniques d'apprentissage accéléré dans le renforcement du concept de soi  
Trente étudiants sur quatre-vingt-dix-sept des cours d'introduction à la psychologie qui avaient obtenu les plus bas résultats au "Total Positive Score" du "Tennessee Self Concept Scale" ont été divisés au hasard en deux groupes de contrôle et un groupe de traitement comprenant dix étudiants chacun.

Le groupe A, le groupe de traitement, a eu deux sessions d'une heure de pratique de relaxation. Un conseiller rencontrait individuellement les membres du groupe pendant trois sessions d'une demi-heure et aussi en groupe pendant cinq sessions d'une demi-heure. Les sessions de traitement étaient destinées à aider les individus à adopter une attitude plus positive à propos d'eux-mêmes, dans des résolutions de changement sélectionnées bien spécifiquement et individuellement. Le processus se fondait sur des techniques de Suggestopédie. Un groupe de contrôle a eu deux sessions d'une heure de pratique en même temps que le groupe de traitement. Un autre groupe n'en a eu aucune.

Les changements dans les tests faits par la suite montrent que le groupe de traitement a obtenu dans son "Total Positive Score" du TSCS .005 et .001 au niveau de la confiance par rapport aux groupes de contrôle.

On a noté la nécessité de la réplique de même que celle de questions pertinentes en ce qui concerne les composantes du procédé de traitement.

#### Beschleunigende Lerntechnik für die Erhöhung des Selbstkonzepts

DreiBig von 97 Studenten in einem Einführungskurs für Psychologie, die die niedrigsten Punktzahlen von der Gesamtpositivsumme (Total Positive Score) der Tennessee Selbststeinschätzungsskala (Tennessee Self Concept Scale) erreichten, wurden zufallsmäßig in zwei Kontrollgruppen und eine Versuchsgruppe von je zehn Personen eingeteilt. Die Versuchsgruppe A erhielt zwei einstündige Sitzungsperioden für Entspannungstraining. Mitglieder der Gruppe trafen sich individuell mit einem Berater sowohl innerhalb drei halbstündiger Sitzungsperioden als auch in Gruppensitzungen von fünf halbstündigen Sitzungsperioden. Um den Individuen zu helfen, wurden Behandlungssitzungen so geplant, daß die Studenten sich positiver gegenüber Entscheidungen über spezifische und selbstgewählte Änderungen fühlten. Der Prozess basierte auf Suggestopädietechnik. Zusammen mit der Versuchsgruppe wurden zwei einstündige Sitzungsperioden für Entspannungstraining mit einer Kontrollgruppe durchgeführt. Die andere Kontrollgruppe erhielt keine Behandlung. Eine Änderung im Nachtest zeigte, daß die Versuchsgruppe in ihren Gesamtpositivsummen auf dem Tennessee Selbststeinschätzungsskala auf dem Vertrauensniveau von .005 und .001 vorangekommen ist.

Es wurde erklärt, daß Wiederholungen wünschenswert wären, und daß betreffende Fragen, die mit Komponenten des Behandlungsprozesses zusammenhängen auftauchen werden.

#### TECNICAS DE APRENDIZAJE ACCELERADO PARA MEJORAR EL CONCEPTO

Resumen: Treinta de los noventa y siete estudiantes que obtuvieron los promedios más bajos en el "Total Positive Score" del Tennessee Self Concept Scale fueron seleccionados aleatoriamente y divididos en dos grupos de control y un grupo de tratamiento. Cada grupo incluía diez sujetos. El grupo "A", el grupo a recibir tratamiento, tuvo dos sesiones de entrenamiento en relajación, de una hora de duración cada una. Los miembros del grupo se reunieron individualmente con el consejero tres veces por media hora y se reunieron en grupo cinco veces por media hora. Las sesiones de tratamiento fueron diseñadas para enseñar a los sujetos como sentirse más seguros de sí mismos en cuanto a las resoluciones de cambio específicas e individuales que habían tomado. El proceso fue basado en técnicas de Sugestopedia. Uno de los grupos de

control tuvo dos sesiones de entrenamiento en relajación de una hora cada una y a la misma vez que el grupo a tratarse. El otro grupo de control no recibió tratamiento. El grupo que recibió tratamiento mejoró su "Total Positive Score" en la prueba TSCS a un nivel de confianza de 0.005 y 0.001, comparado con el grupo de control. Se señaló la necesidad de repetir el experimento, así como las preguntas pertinentes en cuanto a los componentes del proceso de tratamiento.



## THE FIRST SUGGESTOPEDIC GERMAN COURSE IN AUSTRALIA

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### Abstract

The author of this article gives a detailed account of her experiences and experiments with the first suggestopedic German course taught in Australia. Included are summaries of the students' background, their continuous achievements in the German class and an assessment of their responses to a detailed anonymous questionnaire about the course, all of which prove it to have been a great success.

In February of this year I conducted the first suggestopedic German course in Australia in the Department of Continuing Education at the University of Adelaide. In order to give a fair account of the success of this course, the age, the occupation (which indicates in most cases the educational background) and any knowledge or study of a foreign language of the participating students must be considered.

My class consisted of 20 adults of varying ages and backgrounds: 2 under 20, 8 between 20 and 29, 2 between 30 and 39, 4 between 40 and 49, 1 between 50 and 59 and 3 over 60. One student, a Chinese who had come to live in Australia only four years ago, withdrew from the course after the fifth evening. To him this method was so foreign, so unusual, he could not cope with it at all. As far as the students' background was concerned, there were: a retired State Senator and his wife, a teacher (horn) from the Conservatory of Music and his wife, who is a mother, housewife and part-time graduate student, a drama teacher, a secretary to the Minister of the State Education Department, a retired public servant, a social worker in a youth rehabilitation center, a primary school teacher, a travel agent, a librarian (Chinese), a lecturer in a teachers college, mother and housewife, a secretary, an unemployed amateur actor and musician, and six students, mostly music students. One of the music students was an Oriental from Singapore but has been living in Adelaide since her early childhood. All in all there were ten male and ten female students assembled in a double row, semi-circularly arranged in one of the lounges in the University Staff Club. We were allowed twelve evenings of three hours duration each, three evenings per week for four weeks (throughout the

month of February), thirty-six hours in all. The course had to be over on the first Monday of March, when the university's academic term begins. Twenty course participants were necessary to make the course financially viable for the university. Fewer students meant considerably higher fees.

At our first meeting I first of all introduced the method and then asked each student to select a German name and assume a different profession from the one they had. That caused great amusement among the students: the Senator wanted to be Willi Brandt and a lawyer, the retired public servant aspired to be Otto von Habsburg and a cabinet maker and the unemployed hippy-looking young man selected Bergmann which means "miner" for his name and nursing for his occupation. Generally speaking the students preferred the professions to the trades. I conducted the classes more or less as outlined in Schuster's et al. *Manual of Classroom Procedures Based on the Lozanov Method*, (1976). For experimental reasons and research purposed I deviated from "the method" occasionally, as will be seen later on. The students learned on an average approximately 60 words per night, excluding the numbers. I did not use any prescribed textbook, I wrote the dialogues, etc. myself. The topics of the first twelve evenings included: greetings, commands, polite expressions and good wishes; introductions; conversations at the bar, in the restaurant, at a date and dance; then shopping; at the post office; a weekend; family. On the tenth evening I taught a short story by Peter Bichsel, "Der Milchmann" which most students found rather difficult to master compared with the previous conversations. I had the entire seventh evening recorded on video tapes. This event made some students rather uptight and shy and contrasted sharply with their otherwise free and uninhibited behavior in class. I taught quite a lot of formal grammar and three songs. A considerable amount of time was spent on role playing. The first four vocabulary and grammar tests I did not collect for marking, the students checked them themselves. The last three tests I assessed. One elderly woman once scored only 5%, all other students scored between 68% and 99%. Once I gave a vocabulary test in the third hour on vocabulary that the students had learned that same night in the first hour. Three students scored 100%, three 95% and eight between 50% and 70%.

Oral performance of all students improved incredibly fast. More than two thirds of the students showed creativity and originality from the third evening on. On the twelfth night - the night of the last class meeting - they had to perform little skits either in a small group or in pairs. It was a hilarious evening. We held class that night on the terrace of our home. The students combined and changed some of the dialogues they had learned, creating the funniest situations. To top it

all, one student had decided to produce a parody of me and the method, which again was simply marvellous! After one and a half hours of play acting we sat down to a real Viennese dinner and acted out the scenes in the restaurant. Informal chats with the students revealed that the three over sixty did not think that suggestopedia suited them. In fact they found it hard to relax, they could not sit still during the mind calming, they did not see any need for this part of the course. They found the music during the active and passive presentation of the new material to be distracting, as they tried to concentrate on the German. The remaining sixteen students were so enthusiastic about their progress that they wished to continue the course privately, since the university did not allow us to go on unless the students were prepared to pay almost twice the fee they had been charged for the first part. Ultimately nine students managed to agree on two evenings per week, the other seven had various commitments in their jobs or as regular university students and sadly left the course.

So the second part of the course began in our home after one week's intermission: another twelve evenings were planned. The new topics included: curriculum vitae; search for a flat; a trip; a salesman's visit; in the streetcar; a meeting in the library; another short story by Peter Bichsel, "Das Kartenspiel", which again turned out to be the most difficult part for the students. I dealt with both of these short stories in approximately the same way. I read the story to the students three times: The first time the students sat there and listened to me, as I read the story and demonstrated as much of it as possible. The students did not have the script in hand. At the end of my reading I asked them in English about the content. About half the class had understood approximately 40% of the story. As the story presumably takes place in a Swiss country inn, I had Alpine folk music in the background. I then went through the unknown vocabulary with the students, whereby I did not teach words, but expressions, e.g. "in einem verchromten Gefass" = in a chrome plated container. This vocabulary part I presented with Beethoven's Emperor Concerto. Afterwards I read the story for the second time with the piano concerto continuing. The students did again not look at the text. When I checked on the content of the story this time, all but two students had understood the main outline, three could also give some details. Now the students opened their scripts and followed my reading. Then they practised their reading and talked about the story in small groups. The passive presentation followed, all still before our coffee break. After the break we did grammar and revision work. In the last fifteen minutes of the evening I gave them a test on the new story - ten sentences in German - which the students checked themselves. At the beginning of our next evening I gave them another ten sentences in German to be translated into

English. The scores were: 88%, 94%, 50%, 98%, 100% and 98%. Three students were absent that night.

We covered most of the German grammar (excluding the subjunctive, indirect speech and passive voice) and increased our vocabulary by approximately fifty words per class meeting and added four more songs to our repertoire. I checked the students' progress in six short vocabulary/idiom/comprehension and grammar tests. Only once did a student score below 50%. Typical results were:

Frau Achidt (from Singapore): 93, 96, 84, 95, 100% (She missed one test; she had four years of high school German five years ago.)

Frau Hoffmann: 98, 98, 85, 96, 98, 100% (She had one year of high school German 27 years ago)

Herr Weiss: 84, 80, 78, 92, 82% (He had never had any formal instruction in German, but he had come across German words in the course of his music studies.)

Herr Schwarz: 62, 63, 58, 52, 38, 46% (Adjective endings!) (He had never learned any foreign language at all, showed poor language aptitude, had absolutely no grasp of grammar concepts. He remained the least successful student who had great difficulties during mind calming and little understanding of music. All music sounded the same to him, he said.)

Once I gave the same vocabulary and grammar (conjugation) test twice in one evening, the first time after the active presentation session. Out of seven students who took the test: four students got more than fifteen words correct and all conjugations; one student got fourteen words and the conjugations partially correct; one student got eleven words and the conjugations partially correct and one student scored only seven correct words and had the grammar all wrong. He could not think straight, he said.

After our coffee break I took them through the passive session, followed by a question and answer period and by a song. Shortly before the end of the evening I repeated the previous test. The new scores were as follows: six students got between 15 and 20 words correct and all conjugations; one student doubled his score from 7 to 14 words correct and he even managed the conjugations in parts.

After the sixth and seventh meetings respectively we lost one student each, one due to severe illness and one moved interstate. On our last class meeting the remaining seven students performed: two met in a railway station and discussed their lives; three acted out Michael's

"Milkman" story, expanding and changing it with wit and imagination, whereby they incorporated parts of various dialogues they had learned throughout the entire course. They used an enormous amount of vocabulary. One student, the most introverted one in the group, did a monologue about herself. Afterwards the students received a written exam consisting of five parts:

1. A dialogue to be written in German (approx. 10 lines) on either "Im Postamt" or "Im Cafe".
2. A translation from German into English (approx. 320 words).
3. Five English questions to be answered in idiomatic German.
4. A grammar section (fill in the missing words/endings).
5. 15 German questions to be answered in German.

Six of the remaining seven students in the class sat for this test. Scores: 75% (78%); 96% (85%); 69% (70%); 90% (84%); 90% (80%); 44% (60%). The results of the oral performance are given in brackets. It appeared that those students who used a very large amount of vocabulary were less interested in grammatical correctness, as they let themselves get carried away in their conversations, while those who concentrated on grammatical correctness restricted their vocabulary.

As I wanted to test the suitability and possible success of a suggestopedic German course for my regular university work where I am responsible for a highly demanding crash course for beginners, I had to teach grammar as grammar and subsequently demand a degree of grammatical correctness from the students in their oral as well as in their written performance. This created only marginal problems with a minority of students, in fact, especially during the second part of this course the students asked for more grammar. The students realized that grammatical correctness was important not only for good comprehension, but also for their self esteem as serious language students, and therefore they did not find it boring or "spoiling the fun" they had with other parts of the course, as one student put it. In the German Department of the University of Adelaide the students are expected to learn the German grammar, subsequently any IA (crash) course which is followed by IIA and then III must include a sound grounding in grammar. This seems to be the area where the pure Lozanov method is least successful, probably due to the fact that the Lozanov schools try to achieve different objectives from the objectives of a university. I gave the students a questionnaire to be filled in and returned two days later when we had our Australian breakup dinner. An analysis of the answers showed several interesting points:



### I. Physical relaxation:

Which exercises relaxed you best?

- a) swinging to music,
- b) stretching, bending, etc.,
- c) tensing muscles,
- d) controlled breathing,
- e) other.

Most students felt that tensing muscles relaxed them best, followed by controlled breathing. This has also been proven by the Boltzmann Institute for Learning Research in Vienna, where tensing one's muscles preceded every suggestopedic lesson I saw.

### II. Mind calming:

Which calmed you best?

- a) watching your breathing with music,
- b) *Superlearning* cassette (elevators),
- c) image of walking along the beach,
- d) image of walking up a hill - sunrise,
- e) image of beach and ship (to Germany) on the horizon
- f) image of being alone on an island
- g) thinking of something pleasant (without guidance).

Most students felt that the relaxation taken from Ostrander's book *Superlearning* (1979) had the best effect, followed by the image of walking along the beach. The image of walking up a hill through the forest and watching the sunrise had an adverse effect. Reason? Several students found it hard to conjure this image as there are no mountains within a 300 mile radius of Adelaide and no forests to walk through! I should have used the bush instead! Bushwalking is something every Australian has done at some time in his/her life!

### III. Music:

Which type of music did you find most successful?

1) for mind calming:

- a) electronic music (Steve Halpern),
- b) guitar music,
- c) Smetana's "Moldau"
- d) Environmental music.

Halpern's music was rejected by all with varying degrees of vehemence. Instead Indian or Indonesian music should have been used. Environmental music was preferred over the "Moldau" by only one vote. I must add here that one student who is a senior lecturer in the

University's Conservatory of Music once gave an explanatory lecture on the "Moldau" upon my request, which was a great success. I watched this piece of music being used at the Boltzmann Institute most successfully. There all pupils and students who participate in the suggestopedic program are given a lecture on the "Moldau" at the beginning of the year. From then on this piece of music is used extensively for mind calming.

2) for the active presentation:

- a) Beethoven's piano concertos,
- b) Tchaikovsky's piano concertos,
- c) "Moldau",
- d) Haydn symphonies,
- e) violin concertos,
- f) mixed music (Brahms, Mozart, Smetana ...)

Piano concertos were favoured over violin concertos and the rest, except two students found all music given to them very successful.

3) for the passive presentation:

- a) guitar music,
- b) Baroque music (Handel, Bach, Corelli).

Handel and Bach were preferred by all but one, who opted for guitar music.

#### IV. General questions:

1) Have you ever studied a foreign language before taking this course? If yes, which language and for how long?

Only one student had never studied a foreign language at all. The others had studied one or two of the following languages: French, Latin, German and one student did a year's studies of Ndebele, a language related to the Zulu language. The length of their studies varied from six weeks to eight years and as long ago as two to twenty-seven years.

2) Have you ever studied German before? If yes, how many years ago and for how long?

Three students had never studied German before, the others had studied German from six weeks to four years and between two and twenty-seven years ago.

3) Why did you enroll in this German course?

There the answers were manifold, e.g. preparation for university German studies; revision and improvement of previous German studies; upcoming trip to Germany; forebears were from Germany; enjoyment in languages; wish to be able to read Brecht in the original, etc.

4) What made you decide not to continue with the second half of the course?

The answers included mainly commitments to jobs and studies, one went overseas, three felt that this method did not satisfy their needs.

5) What made you decide to take the second half of the course?

The reasons given for entering the second half of the course were enjoyment and the wish to learn more.

6) Which part of the course did you like best? (Role playing, singing, conversation, reading, grammar, vocab. learning, tests)

Vocabulary learning and conversation topped the list, followed by reading and grammar and role playing. One student enjoyed everything equally much.

7) Were you ever bored in any lesson? If yes, what bored you?

They were hardly ever bored; only two of them felt that it became perhaps a little boring, when there was too much repetition in one evening.

8) In your opinion, in which area did you improve most rapidly? (Conversational dialogues, grammar, vocabulary, oral/written comprehension, reading).

Most students felt that they improved rapidly in all areas, in fact it was hard for them to single out any one area. Nevertheless, conversation and vocabulary acquisition were given top rating.

9) Were you worried about your test results?

Two students answered that they were, because they felt that they should have studied at home prior to the tests. But most of the tests were unannounced.

10) Were you ever up-tight or nervous during a lesson due to the

course content or due to the way the teacher handled you and/or the rest of the class?

All answers referred to course content and included being occasionally up-tight at test time, or when they were asked to perform and felt unsure of their partner in the dialogue, or when another student asked a rather advanced grammar question.

11) Did you feel exhausted after a three hour class meeting? Give reasons, if you can.

12) Did you feel relaxed after a three hour class meeting? Give reasons, if you can.

13) Did you leave the class feeling good? Give reasons, if you can.

The answers to these three questions were that the three hour class meetings after a full day's work did not exhaust most of them, in fact they left the class relaxed and feeling good, particularly when the evening had an "active" ending, e.g. when it ended with a song or a game.

14) Did you feel stressed at any time during this course? If yes, say when and why.

The course itself was without stress. Moments of stress occurred, for some students during tests, the time when the evening was taped for video showing, during initial role playing, and when asked to organize the final plays.

15) Did you study (prepare yourself) for the class meetings? If yes, say how many hours per week.

Only three times the students received written homework which they had to hand in for assessment. Apart from that they devoted little time to their German studies at home (from "rarely" to "four hours a week during second half").

16) In your opinion, how could this course be improved?

The main suggestion for the improvement of this course was even more conversation in German, e.g. during coffee break! Another suggestion was to demand synchronized breathing for *all* vocabulary learning periods, as they found that particularly successful.

I can truthfully say that these students learned as much in less time and without stress and little work outside of the classroom as my regular university students achieve in two trimesters in their crash course, where they have five contact hours, two language lab hours plus daily homework of approximately two hours, and where the drop-out rate is about 40%. As far as their oral work is concerned, the suggestopedia students performed far better than the IA (crash course) students ever will at the end of their first year.

I showed the video tape which we had made on the seventh evening to a selected group of high school teachers and to the German Language Consultant. They were all simply stunned. Reactions included calls for an in-service course for teachers. Their worries: mind calming is hypnosis and therefore forbidden in schools, and traditionally enforced testing and assessing is contrary to suggestopedic principles.

I would like to end this account of my experience with suggestopedia with some quotations taken from the students' assessment of their first encounter with suggestopedia: "A very suitable method for classes held at night after people have been studying or working all day. This is, because (the) teacher provides/delivers input in such a way that (the) student can sit back and receive it in a relaxed and receptive state of mind." "Suggestopedia method (is) very relaxing and positive: I learned much and in a short time, and it was fun." "I felt relaxed, refreshed and often quite exhilarated. I went home on the first night extremely excited, singing 'Lili Marlen' all the way." "I think it has been a fantastic learning experience and a real pleasure. I am very grateful for your positive consistent approach and your own enthusiasm. I was greatly encouraged too by the other students' continued interest and commitment." "Best aspect of lessons for me was the wonderful atmosphere." "The atmosphere was relaxed but exciting - it was always fun. I felt totally uninhibited." "I felt freshest after a three hour session!"

What more can one want!

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Le premier cours d'allemand suggestopédique en Australie  
L'auteur de cet article raconte en détail ses expériences personnelles et scientifiques concernant le premier cours d'allemand suggestopédique enseigné en Australie. Ce rapport comprend des résumés biographiques des étudiants, les résultats qu'ils ont obtenus et qui montrent leur progression continue dans le cours d'allemand, de même qu'une évaluation de leurs réponses à un questionnaire détaillé et anonyme au sujet du cours. Toute cette documentation démontre que le cours a eu un grand succès.

Der erste Deutschkurs mit Suggestopädie in Australien  
Die Autorin dieses Artikels gibt eine ausführliche Darlegung ihrer Erfahrungen und Versuche mit dem ersten suggestopädischen Deutschkurs, der in Australien unterrichtet wurde. Dieser Artikel beinhaltet Zusammenfassungen der Lebenssituation der Studenten, ihrer fortlaufenden Leistungen im Deutschkurs und eine Bewertung ihrer Antworten auf einem detaillierten anonymen Fragebogen über diesen Kurs. Dies wurde als ein großer Erfolg bezeichnet.

#### EL PRIMER CURSO DE ALEMAN SUGESTOPEDICO

El autor de este artículo da un recuento detallado de sus experiencias y experimentos en el primer curso de Aleman suggestopédico enseñado en Australia. Se incluye un historial de los estudiantes, un reporte de sus continuos logros en la clase de Aleman y una evaluación de sus respuestas a un cuestionario anónimo acerca del curso, todo lo cual indica que el mismo tuvo gran éxito.

## USING THE MEANS OF SUGGESTION TO HARMONIZE WITH THE BARRIERS

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### ABSTRACT

Rather than talk about the barriers to learning and combatting them by means of suggestion theoretically, I choose to give actual classroom examples where the barriers were demonstrated. Parts of actual lessons are reported in detail to give readers the contextual view from which examples are taken. The core of this presentation is student written work in which they reveal their barriers.

The theme of our talk today is harmony - harmonizing with the barriers. Although I primarily work with English as a Foreign Language with aviation students, I am frequently invited into elementary classrooms to demonstrate Optimal learning. These demonstrations are usually for two week periods one and a half hours a day. The subjects I have demonstrated are social studies, science, math and grammar.

When I first enter a classroom I am very careful about my dual plane. I believe that everyone deserves my respect, that everyone has untapped potential. For those first few minutes until my prestige has time to emerge, my dual plane is broadcasting total respect and appreciation for everyone.

I know where I am going, I know where I hope the students will follow. I know that I'm going to pay attention to them and at times will abandon my plans and follow their direction - if it will lead us to the same objective. By watching my intonation and projecting confidence my prestige emerges and only then, after I sense that I have rapport, will I start using pseudo-passiveness, change the rhythm, and suggest the child-like state.

Lozanov talks about three barriers: the intuitive, the critical/logical, and the ethical. These are barriers to learning, to suggestion, and to communication. The student's intuitive barrier is what senses the teacher's dual plane - a feeling that the teacher can or can't be trusted. The critical/logical barrier senses if the information makes "sense," is logical. The ethical barrier senses whether an issue is moral, or "right," or "wrong."

I have a favorite metaphor that I would like to share with you. One interpretation of this metaphor pertains to the three barriers. Rather than a story, like most metaphors, this is a description of a picture. In this picture we can only see a portion at a time. The first part of the picture we see is the face of a caveman. The caveman's face looks very

angry, violent. How do you picture his face? Is his mouth open or closed? Are his eyes narrowed or wide? Do you imagine any sounds?

In his hand he is holding a club, raised, ready to strike. All we can see of the picture so far is the angry caveman with a club in his raised hand.

As we look at the picture, we see the scene widen just enough to reveal what is causing this violent action of the caveman - it is a saber-toothed tiger, crouched, ready to spring. How do you imagine the tiger...is he large or small... any sounds?

Initially when we saw the caveman and his violence, our intuitive barrier would be alarmed. This is a potential threat to us, this may be a life threatening situation. But when we see the object of the violence, when we see the saber-toothed tiger, logic as asserted itself into the picture and the critical/logical barrier is satisfied, is harmonized with. This is a logical situation, here we have a caveman confronted with a potential threat and he is reacting logically.

But there is more to the picture. Our view widens, and now we can see the entire picture. In addition to the caveman and the tiger, we see standing behind the caveman, his wife and children. He is protecting them from the threat of the tiger. Now, not only is our critical/logical barrier satisfied, but our ethical barrier is satisfied as well. This is a very good, ethical, moral thing the caveman is doing.

So when we see the whole picture, it makes sense, we can harmonize and understand it ethically, critical/logically, and intuitively maybe we can justify the violence.

I like to remember this metaphor, because I know that when the students first encounter me in the classroom, the first impression is the one sensed by the intuitive barrier. The impression of me by the student's intuitive barriers will always be associated and coded with my presence. From the first moment my dual plane will harmonize or alarm their intuitive barrier. The limited first view of the caveman is like the students' limited view of us at first meeting. When more of us is seen (when their picture of us widens), they will have more information to assess us, using their critical/logical and ethical barriers. Unlike the caveman, I do not want my first impression to be threatening; but like the caveman, I want my actions to be seen as logical and ethical by my students.

I would like to share with you some specific examples that I have from classrooms, showing ways how children exhibit these barriers; how they exhibit the content or little clues as to what their barriers are made up of; what alarms them, what doesn't alarm them, what satisfies them, what doesn't. I'd like to start with the critical/logical barrier and show you some sentences that some fourth graders wrote for me. This was a class in science that was studying "sound." As we went through

the two weeks we came upon some questions that the class and I discovered together we couldn't answer. They were mostly medically complex questions that we didn't have the resources to research. I had invited an eye-ears-nose-throat doctor to visit class on the last day of the unit. He would be able to answer any questions we had. So as a class, we listed questions on the board and kept them there. These suggested "curiosity" - an element of the child-like state. Like many good plans, this one went astray, but had a hidden bonus. On the day the doctor was to visit, he had to perform emergency surgery. Well, that was okay with the kids, that was what a doctor did - he had emergencies. They knew that, and they were comfortable with that. In this situation both their critical/logical and ethical barriers were harmonized.

What the children did was write out their questions for the doctor and I took them to him. He, in turn, wrote responses back to the class. The doctor also did an exciting thing. When he responded, he didn't just answer their questions, but he asked them a question of his own. The question was the classic one: "If a tree falls in a forest and there is no one there to hear it, does it make a sound?" These students had been studying sound for two weeks, so they had lots of opinions, and they aren't all the same. I'd like to share them with you:

Courtney: "Yes, the animals here the sound." (sic)

Bill: "Yes, because if someone had a recorder there it could pick it up." (sic)

Bill is thinking along the same lines as Courtney. Notice that these are fourth grade children and we are watching a very strong desire for logic emerge. They really demand and enjoy logic and they get uncomfortable when it's not present. Here are two other examples:

Kevin: "Yes, when other trees fall you can hear them." (sic)

Christine: "Yes, even if know one is their, there would still be a sound. It's like if a dog barks and know one is there it will still make a sound so yes." (sic)

Now, of course, I'm ending with my favorite one, and this really states for me how strong the need and demand for logic is. This young man says:

"If no one was there, how did you know it fell."

As examples of the intuitive barrier, in a fifth grade class studying the Revolutionary War, this class had decided to create their own newspaper. This was their own idea. They were going to date it July 4, 1776, and this was going to be a special edition. However, the class got into a conflict over what to call it. What is the name going to be. So we decided to have an election. They nominated titles, campaigned, and voted. It got to be a very heated issue. Some of the students got very attached to their titles and were campaigning very strongly - stretching the campaign rules. The campaigning abuses were a natural lead-in to discussing why there are voting laws and what these laws might be. Here again we were looking at how closely the barriers intertwine and don't separate themselves neatly. There was the intuitive issue of strong emotional attachment to their nominated titles that they liked so well, and their ethical barriers were also alarmed by the campaigning techniques. They wanted to know about the laws that control campaigning and voting. Here again, a beautiful teaching opportunity was created by the students.

The nominations were finally whittled down to just two, and they voted. After the election, obviously only one title could win, so some of the students were disappointed. As soon as the election results were in, I asked all the students to take out a piece of paper and write down anything that symbolized, either in word or picture, how they were feeling right then. I knew that there was some strong emotion going on, there was real potential intuitive barrier alarm here that needed grounding, acknowledging, that needed harmonizing. So one of the first steps was to have them just express it on paper. I'd like to share some of their responses with you:

Rod wrote: "I'm very SORRY!!" (sic)

He used nice big letters, but they are tidy. So he was obviously not too overwhelmed by the experience, but had enough feeling that he was expressing his regrets.

Here's Lisa:

- "1. Grrrrrrrrrrrrrrreat
2. terrific
3. supurb
4. splendid
5. special" (sic)

There's emotion in all those "r's", but it is also very carefully numbered, and she is not so overwhelmed that she abandons order.

The last example:

" ! I  
love  
Love ! it  
Love  
It It ! " (sic)

He loves it! Thinks it's just terrific. No order, just emotion.

So these things are objectively showing up all the time in our classrooms. Kids' responses show their barriers when they are alarmed or harmonized with.

I'm going to spend a few more minutes on some more children's illustrations of the barriers, because I really want to emphasize how important acknowledging the barriers is to effective communication in teaching. A piece of music that I use in the classroom is recorded by Pete Seeger and it is called "The Song of Independence." As Ivan Barzakov mentioned earlier, freedom is also an Optimizelearning objective. The freedom for students to use their own self-mastery. In the Revolutionary War classroom we discuss freedom. It is one of the concepts in the affective domain. I don't believe in backing away from affective material because we teach whole children, not just their cognitive portion. Students need the opportunity to express all their capacities.

This song was written by a four year old boy. He was singing it in the bathtub and his father wrote it down. In it he sings about wanting the freedom to sit and do nothing, go and play with the pandas, not eat his vegetables, etc. He is talking about two different kinds of freedom - the freedom from some things and the freedom to do other things. I have not found a classroom that did not enjoy this song - whether adult or elementary. One of the things I ask the students to do after listening to the song, is to write their own song of independence. To write both freedoms "from" something and freedom "to do" or be something.

The following examples of children's own songs of independence (in this case fifth graders) exhibit how really intuitively sensitive and how ethical children are. These examples illustrate a combination of intuitive criteria of safety and protection and ethical criteria of justice and "rightness".

Billy wrote:

"I want fedum to speak.

I want the fedom from violence." (sic)

Mason wrote:

"I want the freedom to eat.

I want the fredom from sadness." (sic)



(Mason in real life, is a sad boy.)

Here is a particularly interesting one. This is Michelle's:  
"I want the freedom from tests." (sic)

Michelle is a straight "A" student. She is an over-achiever and not until we saw this did we know or have an idea of the anxiety she felt every time she had to perform well on a test. A test alarmed her intuitive barrier.

This is from Soeren:  
"I want the freedom to live.  
I want the freedom from pain!" (sic)

I have two more examples where you can see how difficult it is to separate the intuitive barrier from the ethical barrier. They're so closely interwoven. These students are 10 or 11 years old. Here are two that I thought may be a better example of the ethical barrier, but they are also intuitive.

Bobby:  
"I want the freedom to be heard." (sic)

Ashley:  
"I want the freedom to be alone whenever I wish without someone hanging around me."  
"I want the freedom from hard labor at school and sometimes at home." (sic)

(Ashley is very popular, by the way.)

I think a lot of you would agree with their freedoms. You could just pick them up and adopt them for yourself.

To continue with some examples of the content of the ethical barrier, in a Civil War classroom we had studied the conditions of the North and South, before the war. The students were really excited about the way they were learning. In all these classrooms I use the Optimal learning system. They had a lot of varied information. Some was told in story form, some through activities. After we had talked about the conditions that began the war, I asked them, because there were strong and involved discussions about who was right or who was wrong, who had the best chance of winning and what it might feel like to be in each of those positions. I had the students write a paragraph that would describe how they would feel if they were there. They had three

choices. They could either be a confederate soldier, a union soldier, or a slave. How would they imagine it would be at the time of the Civil War. I'd like to read several of these to you and I would like to do them as a concert reading with the music that we use in the classroom with some of our activities. ("Songs of the North and South," by the Mormon Tabernacle Choir)

Jamie (a girl) writing as a Union Soldier:

"It's terrible to march all day, but your're doing it for the North. Slavery is wrong. That's what the war is about, but you don't mind, you have the advantage. More factories to manufacture blankets, weapons, and you have more railroads for quicker transportation of men, food, and weapons. You also have more money. Abraham Lincoln is right. Slavery is terrible. Think of it! To have to work all day, and get whipped and starved! Thank goodness for the underground railroad! March, march, march, march!" (sic)

Justin, also writing as a Union Soldier:

"I wouldn't like it at all having to kill other humans. And the idea of people in the South taking free people from their own country and buying and selling them. And separating their families. Because you should never price a person because each person is worth more than all the money and riches in the whole world." (sic)

Jeff: "I am a Union Soldier and feel like I am fighting for what is right. Owning slaves is bad. It should be illegal. People do not have the right to have slaves. They do not have the right to own people. All men are created equals. Nobody is better than anyone else. Every man should be free." (sic)

Matthew, a Confederate Soldier:

"It was hard. I didn't know what to do. I thought some against slavery but it was my state and I needed workers and it was nice not having to work. I think people should have slaves. Well people with a lot of money and a plantation. I'm scared to go to war. I may never see home again. The Union is so big

and they have so many people. My brother was killed!" (sic)

A boy, writing as a slave:

"I am a slave and I enjoy being one because I have a very good life and they treat me well.

I am never beaten. It is very nice to be able to leave it. All my family is with me.

I will be going to New York to see my father." (sic)

I believe the expression that these children show and their capacity to fantasize, to get inside of what it might be like, was really interesting. Especially the last boy who wrote about being a slave. His ethical barrier was strongly alarmed. He was into denial. We had talked about the fact that there were some good plantation owners. There were some people who cared, but that was not the condition of most of the slaves in the South. But that boy chose to write from the position and feeling of a well-treated slave because ethically he was alarmed by the concept of mistreating, selling and buying people. I included that one because I thought it was a good expression of the ethical essence children have.

One of the other barriers that we are going to talk about is the barrier to acceleration - the fear that comes when a student experiences learning more, faster and easier than he believes he is capable of. Lozanov talked about it, where the students would accelerate to a point and then they would disbelieve that they could be doing so well and having so much fun. It was so easy, how could this happen so easily? Their test scores reflect this doubt. When they move through this barrier to acceleration, the scores dramatically increase. In the elementary classroom I run into this learning block to acceleration very quickly. It traditionally happens to me on the third day in a two week period, when the children know I'm going to be in the classroom for two weeks. On the third day, when I walk into the classroom there is a change. I can feel it as soon as I walk. Let's take a sixth grade classroom studying WWII as an example.

The first thing I do on that first day is tell them that they're going to have an exciting lesson. We are going to be discovering the relationship between things that are happening today, like video games and mothers working that began back with the Second World War. I ask them to put their social studies textbook on their desks as a way of grounding them, reminding them that this is what our activities relate to. (We are not going to open those books for the whole two weeks as a class assignment. But what I know will happen, is that they will voluntarily read the sections on WWII because they will become so

was real interesting and there were new things to do on Monday and Tuesday, but this isn't right. I talked to my other friends who are studying WWII and they aren't doing this. But then they don't know about Lend Lease, and I do." Although the above quotations are my own interpretation of what I sensed the children were thinking, students have told me at the end of the two weeks that those were the kinds of things that were going through their heads.

At this point, at the beginning of day three, I know that it's important for me not to change one thing that I do. I must act almost as if nothing has changed in the room. They must see that I am still going to relate to them in the way that I have been. That I am still going to provide structure for them that they can be involved in. That I don't care whether they are worried, fearful, or excited - I love them just the same. I respect their ability and we're going to continue. We're going to go forward. Once they see that I mean that, that I don't change, even when they are questioning, I have harmonized with their barrier to acceleration. At this delicate moment, I am acutely aware of my dual plane, maintain a steady, less varied rhythm, and use good eye contact. From that point on they go on to greater participation than ever before and with greater enthusiasm.

What happened was that from one person bringing something from home on the third day, by the end of the second week every student had brought not only one thing but had brought bags full of things. Talk about motivated to know! They would bring medals, uniforms, even mortar shell casings. They scoured their neighborhoods, talked to older people in their neighborhoods who had been in the war. They created friendships with these people. They wrote reports so they could report accurately. They did their own research without my ever asking for it. That degree of participation was a measure for me of the break through the barrier to acceleration.

A footnote on this class: We studied WWII together in November. Their regular classroom teacher told me that at their Christmas party in December, the majority of gifts exchanged were WWII related.

I want to show you something from my English as a Foreign Language classroom. These students are all adult Spanish-speaking males, 19-30 years old. These test scores are raw data, but they illustrate Lozanov's experience with the barrier to acceleration:

Lozanov's theory as I understand it, is that when a student's barrier to acceleration occurs, this will be reflected in the student's weekly test score. The scores will initially be high, but after two or three tests, an element of disbelief (his barrier) in his ability to learn so much material so easily, will cause the test score to drop. Like the WWII classroom, when the student passes through his barrier to acceleration, he will learn faster and easier.

TABLE 1 WEEKLY TEST SCORES

| Student Name | Week<br>1 | Week<br>2 | Week<br>3 | Week<br>4 | Week<br>5 |
|--------------|-----------|-----------|-----------|-----------|-----------|
| Dave         | 100%      | 88%       | 100%      | 100%      | 100%      |
| Paul         | 84%       | 89%       | 89%       | 83%       | 90%       |
| James        | 89%       | 98%       | 75%       | 85%       | 90%       |
| Charles      | 100%      | 94%       | 64%       | 83%       | 94%       |
| Don          | 83%       | 98%       | 80%       | 98%       | 92%       |
| Alex         | 91%       | 94%       | 78%       | 88%       | 92%       |

In the table above, Dave had his lowest score in week two. So it was in the second week that he hit his barrier to acceleration. Dave also spoke better English than some of the others when he arrived. What happened for Dave was that beginning in week three he stopped translating in his head, and he was thinking in English.

Paul did not hit his lowest score until week four. He reached his highest score after passing through his barrier.

The other four students in this class all hit their barrier in Week three. Charles had a dental problem, so his score in week three is probably lower than it normally would have been.

In conclusion, I think that barriers are very important protection for us from things that we perceive as harmful. The idea of harmonizing with a student's barrier is one of the most important concepts for me in Suggestology and Optimallearning. Rather than push down, or push through a student's barrier, the idea of harmonizing with it so that the student can lower the barrier himself when he is ready is very appealing to a humanitarian approach in education. By increasing my awareness of students' barriers, I have learned to be more aware of my own barriers. By observing myself, I can notice when I am raising a barrier. I always learn something new about myself by paying attention to the experience or event that alarmed a personal barrier. A unique benefit to the me as a teacher using Optimallearning is that I learn as much from my students as they learn from me. Every teaching day is exciting and joyful for all of us.

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L'harmonisation de la suggestion et des barrières antisuggestives

Ce rapport a été présenté au symposium SALT en 1982 à Fort Collins (Colorado). Au lieu de parler théoriquement des barrières antisuggestives et du rôle et des moyens de la suggestion, l'auteur donne des exemples de barrières qui ont été démontrées dans la salle de classe. Des parties de certaines leçons sont relatées en détail afin de donner aux auditeurs/lecteurs le contexte exact d'où les exemples ont été pris. L'essentiel de cette présentation comprend des travaux écrits où les étudiants révèlent leurs barrières.

Der Gebrauch der Suggestionmittel um mit den Barrieren zu harmonisieren  
Dieser Vortrag wurde an der 1982 SALT-Tagung in Ft. Collins, Colorado gehalten. Statt über die Suggestionbarrieren und -mittel theoretisch zu reden, wurde entschlossen, realistische Unterrichtsbeispiele, innerhalb derer sich diese Barrieren deutlich zeigen, zu verwenden. Teil der Unterrichtsbeispiele sind im Einzelnen wiederzugeben, um den Zuhörern den Gesamtüberblick zu ermöglichen, aus dem diese Beispiele entnommen wurden. Kern dieses Vortrags sind schriftliche Arbeiten von Studenten, in denen sie ihre Barriere zeigen.

#### UTILIZACION DE LA SUGESTION PARA ARMONIZAR CON LAS BARRERAS

Esta presentación fue dada en la conferencia de SALT en Ft. Collins, Colorado. En vez de hablar acerca de las barreras y de los métodos de sugestión teóricamente, yo he decidido dar ejemplos actuales del salón de clase donde las barreras fueron demostradas. Partes de las lecciones fueron reportadas en detalle para darle a la audiencia una perspectiva del contexto de donde se tomaron los ejemplos. La esencia de esta presentación es el trabajo escrito por los estudiantes en el cual ellos revelan sus barreras.



## MUSIC and VOCABULARY LEARNING

by

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### ABSTRACT

This study evaluated the effect of three different types of music on vocabulary learning in the context of other independent variables, which were one of three types of music played during learning, one of three types of music played during the quiz, subject gender, the use of an easy suggestion, list easiness, and practice. The acquisition score on a preliminary easy test was used as a co-variate in the analysis of covariance to adjust the acquisition and retention test scores due to a significant non-random self-assignment of subjects to the different music treatment combinations on ability to learn vocabulary. There were two major dependent variables or criteria, the acquisition score as defined by the number of words defined correctly on the quiz given immediately after learning and secondly, the retention score or the number of words matched correctly one week later. There were eight affective minor criteria given to help interpret the cognitive findings. Subjects were 288 college students recruited from university undergraduate psychology classes; they received extra credit for participating in this research. Subjects in 18 different treatment groups were sequentially given four lists of vocabulary words to study and learn. As expected on the basis of the review of the literature, learning was best when Baroque music had been played during learning or during the quiz over such vocabulary learning. Many significant interactions were reported and discussed. In general, the affective ratings provided support for the cognitive results in that affective ratings were generally best for the Baroque music condition.

### PURPOSE

The purpose of this research effort was to evaluate the effects of three different types of music on vocabulary learning. The effect of type of music was evaluated in the context of accelerative learning along with the other variables of subject gender or sex, suggestion, easiness of list and practice.

### LITERATURE REVIEW

Lozanov (1971 & 1978) in his book makes a statement that when foreign language vocabulary was reviewed with classical music it was possible to learn an average of 0.6 words per minute. In contrast when material had been reviewed with baroque music, 1.2 words per min. were learned by his students. Bordon and Schuster (1976) reported that the use of baroque music by J. S. Bach and Vivaldi resulted in a 25% improvement in the acquisition of paired associate Spanish words compared to when this music was absent. In terms of retention 6 weeks

later, retention scores were 22% better when music had been used than when it was not. In a study of the psychological and physiological effects of music, Blanchard (1979) reported that both classical music, and rock and roll music, significantly enhanced final exam scores of college students compared with the control condition where no music was presented to students during the exam.

Thus, on the basis of this review, we felt that music would definitely enhance the learning of paired vocabulary associates. Further we expected to corroborate what Lozanov had reported, that Baroque would be better than no music while the students were studying the vocabulary material to be learned. We also felt that classical music would result in intermediate learning.

We included several other independent variables reported in the literature to influence learning in a context similar to ours. The effect of difficulty of material to be learned is important, as reported by Crawford (1978), Schuster et. al. (1980) and Strainghn et. al. (1969). Suggestion also is an important variable in this type of study as reported by Lozanov (1978) and Schuster et. al. (1980).

Since we investigated the effects of music against a context of variables known to influence vocabulary learning, we list here our major hypotheses regarding the main effects of the 7 independent variables used in this study.

1. We predicted that female subjects would learn vocabulary words somewhat better than male subjects as is typical in the literature.
2. We predicted that baroque music played during vocabulary learning would result in significantly better learning than not having music at all, while playing classical music during the learning period would produce intermediate results.
3. We predicted that the effect of baroque music played during the quiz over the vocabulary material just learned would produce superior learning as compared to the control condition of no music, again with classical music producing an intermediate result.
4. We predicted that data collected over two quarters as replications would be consistent; that is, there would be no significant differences between data collected one school term and similar data collected the next term.
5. We hypothesized that the effect of suggestion would produce higher learning scores when the material was suggested to be easy than when it was suggested to be hard.
6. We hypothesized that vocabulary lists with words randomly selected from an easy pool would be learned with significantly higher scores than lists developed from a pool of hard words.
7. We hypothesized that subjects would improve with practice while listening to music and that subjects would learn significantly

more vocabulary words in the last half of their practice than in the first half of their practice in this study.

## Method

We used a mixed model analysis of variance (ANOVA) model design. There were 7 major independent variables along with a control variable, one covariate and 2 major dependent variables or criteria along with 8 affective rating scores as minor dependent variables. See Table 1 and the interested reader can gain an overall perspective of what we were trying to do in this study.

TABLE 1. LIST OF VARIABLES IN MUSIC AND LEARNING STUDY.

### INDEPENDENT VARIABLES

| BETWEEN GROUPS                                                | LEVELS |
|---------------------------------------------------------------|--------|
| 1. Gender of subject: 1 - Male, 2 - Female                    | 2      |
| 2. Music 1: 1 - None, 2 - Baroque, 3 - Classical              | 3      |
| 3. Music 2: 1 - None, 2 - Baroque, 3 - Classical              | 3      |
| 4; Quarter: 1 - Fall, 2 - Winter                              | 2      |
| 5. Sequence: 1 - Hard-Easy-Easy-Hard, 2 - Easy-Hard-Hard-Easy | (2)    |

### WITHIN SUBJECTS

|                                                  |   |
|--------------------------------------------------|---|
| 6. Suggestion: 1 - Hard, 2 - Easy                | 2 |
| 7. Easiness of list: 1 - Hard, 2 - Easy          | 2 |
| 8. Practice: 1 - First 2 lists, 2 - Last 2 lists | 2 |

### COVARIATE

### RANGE

|                                                            |           |
|------------------------------------------------------------|-----------|
| 1. Acquisition score, number right on preliminary list 20. | 0-25 max. |
|------------------------------------------------------------|-----------|

### DEPENDENT VARIABLES

|                                                           |           |
|-----------------------------------------------------------|-----------|
| 1. Acquisition score, number of words defined per list.   | 0-25 max. |
| 2. Retention score, number of words matched 1 week later. | 0-25 max. |
| 3. Relaxed rating before learning a list.                 | 1-9 max.  |
| 4. Happy rating before learning a list.                   | 1-9 max.  |
| 5. Liked rating before learning a list.                   | 1-9 max.  |
| 6. Relaxed rating before quiz.                            | 1-9 max.  |
| 7. Happy rating before quiz.                              | 1-9 max.  |
| 8. Liked rating before quiz.                              | 1-9 max.  |
| 9. Pleasantness rating after quiz.                        | 1-9 max.  |
| 10. Alertness rating after quiz.                          | 1-9 max.  |

The first between-subjects independent variable was subject gender, male or female. Half of the subjects in each experimental treatment cell were male and half female.

Music during three minutes of learning was the second independent variable. This was split into three levels as follows, no music played during learning as a control, baroque music from Handel's Water Music played for 3 minutes, or classical music from Rimsky-Korsakoff's Scheherazade Suite, The Young Prince and the Young Princess. This music was played for 3 minutes before the vocabulary words to be learned were presented and continued for the 3 minutes allotted to studying the vocabulary list.

Music during the quiz was the third independent variable and could have been the same or different than music played during learning. The same 3 types of musical conditions were used as above, no music as control, baroque, and classical. The same music selections and timing were used as above.

The quarter in which data were collected was the fourth independent variable, namely, fall or the winter quarter data.

Sequence of list easiness was a control variable and was not tested specifically. Half of the experimental subjects had 4 lists to learn in a hard-easy-easy-hard sequence and the other half of the subjects were counterbalanced and had the complementary sequence easy-hard-hard-easy.

The first within-subject independent variable was that of suggestion, hard or easy. The suggestion was typed and given to subjects as part of their package of 4 lists to be learned. The hard suggestion was as follows "Some subjects find these vocabulary lists easy to learn and other subjects find these lists hard to learn. You will find this particular list harder than usual to learn". The easy suggestion was as follows: "Some subjects find these vocabulary lists easy to learn. Other subjects find these lists hard to learn. You will find this list will be easy to learn and that you will be able to learn the list easily and remember it."

The second within-subjects independent variable was list easiness. On the basis of previous research, lists had been developed which were easy, another set of lists had been developed which were hard, as determined by randomly selecting words overall from above or below the median for that type of word.

Practice was the last within-subjects variable. This was dichotomized as follows: The first two of four lists taken versus the last two of four lists taken. Note that sequence of lists and list easiness were counter-balanced or orthogonal to this variable.

As a covariate, the acquisition score on preliminary list no. 20 was used in case there were significant differences in the random assignment of subjects to the experimental treatment cells.

## DEPENDENT VARIABLES.

The first major dependent variable or criterion was the acquisition score on the quiz given immediately after the 3 minute learning period devoted to a given list. The score was the number of words recalled and defined in writing correctly per list, and ranged from 0 to 25 maximum. If a student had known a word before, he or she was instructed to circle this word, and the student's score was reduced appropriately. Very few students knew one or more words previously.

The second major dependent variable was the retention score on the quiz given 7 days after learning. The score here was the number of words matched correctly in a list of 30 words which included correct definitions and 5 chance distractors which had not been in the original list. Again the scores ranged from 0 to 25 maximum.

There were three affective ratings made after three minutes of listening to the music for the first time and before the lists were given for study. All of these affective ratings utilized a nine point scale (1-very low, to 5= intermediate, to 9-highest). The first affective preliminary criterion was how relaxed the student felt after 3 minutes of music. The second preliminary rating was how happy the student felt, and the third was how the student liked the music he or she had just been listening to for 3 minutes. The same affective ratings were repeated at the end of 3 minutes of studying the vocabulary list and before the student took the acquisition quiz over the list just studied.

After students finished the acquisition quiz, they took the last two affective ratings. Pleasantness of the quiz was the first of these ratings and how alert the student felt was the second. Again "1" meant the very low end of the scale, "5" intermediate, and "9" meant absolute tops on the rating scale.

## SUBJECTS.

Subjects were recruited from students in undergraduate psychology classes at the university with bonus credit being given for participation in this experiment. There was a total of 288 students with 144 in each quarter. There were 9 groups of students who got a different type of music, that is, students could have heard any one of 3 types of music while learning the list and they could have heard any of the 3 types of music again while taking the quiz over the list. Thus over the 2 quarters there were 18 groups of students, approximately 20 subjects at a time. Somewhat more subjects were used than necessary to allow for attrition, as not all subjects were expected to show up for retention test 7 days later. When more than 16 subjects per group appeared, students were deleted randomly to pare the number of subjects to 16 per group.

The subjects of course were always half male and half female within each group and further counterbalanced in that half of the subjects had the hard-easy-easy-hard sequence of lists and the other half of the subjects the complement.

## PROCEDURE.

The subjects were greeted at the experimental room door, invited to sit down and the purpose of the study explained to them. Then subjects were given the preliminary list no. 20 to study for 6 min. and then given the quiz over this preliminary list to define the words in 5 min. No music was used during this preliminary list learning or testing.

Then as dictated by our preliminary design, subjects listened to one of the music combinations (none, baroque or classical) for 3 minutes and then took the first 3 affective or subjective measures.

Then the same combination of music was continued for 3 minutes while the subjects worked on learning the 25 vocabulary words per list. The experimenter spoke the 25 words in the list to be learned aloud and gave their common definitions to the subjects in 3 min. At the end of this time the subjects answered the 3 affective measures again, ratings on relaxation, happiness and to what extent they liked what they had just done.

Then the music was changed or given over again the second time depending on our experimental design for a total of 9 combinations of music given during learning and during testing. During this time the subjects were given the acquisition quiz and asked to write in the definition of words which they remembered from the list just studied. Three minutes were given for this.

Subjects were then instructed to respond to the pleasantness and alertness ratings given at the top of the acquisition list.

These steps were repeated until subjects had taken all 4 lists. Between the second and third lists, a ten or 15 minute break was given with subjects allowed to stand up, move about, etc.

The lists themselves had been developed in previous research. A pool of 200 rare words was available where the words all had been above the median in terms of students' ability to remember their definitions. A second pool of 200 words was available where the words had all been below the median difficulty in easiness. Each list of 25 words comprised two words beginning with each of the following consonants: B, C, D, F, G, K, L, M, P, R, S, T, and one word with the initial consonant W. The order of words from one list to another varied in a pseudo-random pattern. While words were presented in this fixed and apparently random sequence within a list for learning, words were always presented in alphabetical order on the quizzes. The retention



quiz given 7 days later had the stimulus 25 words presented alphabetically and their definitions presented alphabetically on the right half of the page in a matching format with 5 distractors included to minimize guessing.

The second author was the experimenter who actually worked with the subjects and collected the data. The first author attempted to keep the experimenter neutral on our music hypotheses by saying, "Lozanov says this music helps, but frankly I'm very skeptical."

## RESULTS.

First we analyzed the pretest scores to determine whether students had randomly assigned themselves upon the basis of vocabulary learning ability to the 18 different subject groups. Unfortunately, we found that students had not randomly assigned themselves to the treatment cells of learning with music by quarter ( $F = 7.07$ ,  $df = 2/252$ ,  $p < .01$ ). As a result we did not utilize the analysis of variance model to test our effects as we had originally hoped. Instead we utilized an analysis of covariance to test the effects and interactions of the 4 between-subject variables. Secondly we used an analysis of gain scores model to test the effects of the within-subject variables of suggestion, list easiness and practice, and their interactions.

The effect of music during learning was significant ( $F = 31.36$ ,  $df = 2/251$ ,  $p < .0001$ ) on acquisition scores. This is shown in Figure 1, along with the data for retention, also significant ( $F = 16.77$ ,  $df = 2/251$ ,  $p < .0001$ ) Students who had listened to baroque music during learning had the highest scores, while students who had been in the control condition with no music had the lowest scores, and students who had heard classical music had intermediate average scores. This pattern was repeated for retention and is also shown in Figure 1. Utilizing a Newmann-Deuls after-the-fact test, all differences between the 3 types of music are significantly different at the 1% level for both acquisition and retention.

The effect of music during the quiz was significant for acquisition ( $F = 6.34$ ,  $df = 2/251$ ,  $p < .003$ ) and the data are shown in Figure 2. The effect of music during quiz on retention was not significant ( $F = 1.84$ ,  $df = 2/251$ ,  $p < .16$ ) but are shown for comparison in Figure 2. The Newmann-Keuls test showed that all average acquisition scores here were significantly different from each other at the 5% level of significance.

Interaction between music during learning and during the quiz along with quarter was significant ( $F = 2.76$ ,  $df = 2/251$ ,  $p < .03$ ) but is

ignored as data from one quarter to the next were felt merely to be replication and the interaction would probably be due to chance.

The covariate, the preliminary test scores on list no. 20, significantly affected both acquisition ( $F = 14.35$ ,  $df = 1/251$ ,  $p < .0004$ ) and retention ( $F = 13.38$ ,  $df = 1/251$ ,  $p < .0006$ ). These results merely reflect what we had stated earlier about the non-random assignment of subjects by themselves to the different treatment cells and of course justify the analysis of covariance instead of for the hoped-for analysis of variance.

To analyze the effects of the within-subject variables of suggestion, list easiness and practice, and their interactions, we utilized analysis of variance of gain (difference) scores. The analysis of covariance in this case was not appropriate as the same value of the pretest was present for all levels of the within-subject variables of suggestion, easiness, and practice. Unfortunately this part of the experimental design was not completely orthogonal and, a few of the higher order interaction terms were not analyzed due to radical departures from balanced cell frequencies. However, the analyses to be described below were either completely orthogonal or very close to it, and thus the results can be viewed with confidence. The preliminary list no. 20 was a fairly easy test so that as a consequence the gain scores were almost all negative.

We tested 30 main and interaction effects on acquisition and again on retention. At the 5% level, 1.5 effects would be expected to be significant by chance whereas, we found 17 for acquisition and 19 for retention. Similarly, at the 1% level we would have expected 0.3 effects significant by chance whereas we found 13 for acquisition and 15 for retention. Thus, we have considerable confidence in the reliability or repeatability of our results.

The effect of practice on acquisition scores was significant ( $F = 521.83$ ,  $df = 1/838$ ,  $p < .0001$ ). The difference score for the first practice block was -3.69 and much higher for the second practice block, -0.93. The effect of practice on retention was also significant ( $F = 754.78$ ,  $df = 1/838$ ,  $p < .0001$ ). The difference score for the first block was -4.42 and for the second block was much higher -0.91.

The effect of list easiness was significant for acquisition score ( $F = 481.02$ ,  $df = 1/838$ ,  $p < .0001$ ) with the difference scores for the hard tests averaging -3.63 and -0.98 for the easy set. The effect of list easiness was also significant on the retention score ( $F = 727.64$ ,  $df = 1/838$ ,  $p < .0001$ ) with the difference averaging -4.38 for the hard lists and -0.94 for the easy lists.

The effect of suggestion was significant on acquisition ( $F = 13.70$ ,  $df = 1/838$ ,  $p < .0005$ ), with the difference score being higher (-2.09) when a hard suggestion was given than when easy suggestion was given (-2.53). The effect was not significant for retention ( $p = .22$ ).

Apparently printed suggestion here was not prestigious enough to be effective.

The analysis of gain scores corroborated the significant effect of music during learning on both acquisition and retention but failed to confirm results for effects of music during the quiz. The analysis of covariance data are preferred statistically because of complete orthogonality to the analysis of gain scores by ANOVA in this case.

The interaction of suggestion and practice was significant ( $F = 47.21$ ,  $df = 1/838$ ,  $p < .0001$ ) on acquisition. Subjects made a greater gain without suggestion, going from an average difference score of  $-3.90$  on the first practice block to  $-0.31$  on the second and last practice block than they did with suggestion. With suggestions subjects improved not quite so much, going from a difference score  $-3.48$  on the first block to a difference score of  $-1.57$  on the last block.

The interaction of suggestion and practice on acquisition was also significant ( $F = 47.21$ ,  $df = 1/828$ ,  $p < .0001$ ) with subjects improving more without suggestion than with suggestion over practice. This retention significant interaction ( $F = 45.38$ ,  $df = 1/838$ ,  $p < .0001$ ) is subsumed in Figure 3.

The interaction of music during quiz, suggestion and practice was significant on retention ( $F = 6.35$ ,  $df = 2/838$ ,  $p < .003$ ). The results are shown in Figure 3. The gist of the interaction appears to be that subjects given no music without suggestion improved more than the other two music combinations, with or without suggestions. Apparently the experience of learning 4 lists outweighed the simple printed suggestion.

The effect of music during learning and practice was significant ( $F = 20.88$ ,  $df = 2/838$ ,  $p < .0001$ ) on acquisition; these results are included in Figure 4. The interaction of music during learning and practice was also significant on retention score ( $F = 26.34$ ,  $df = 2/838$ ,  $p < .0001$ ). This two-way interaction is also subsumed in the higher-order interaction in Figure 4.

The interaction of gender, music during learning and practice on acquisition was significant ( $F 4.27$ ,  $df = 2/838$ ,  $p < .02$ ) and the results are shown in Figure 4. Whereas male subjects improved about the same amount under all 3 music conditions, female subjects learned appreciably more with either baroque or classical music. Again this 3-way interaction of gender, music during learning and practice was significant on the retention score ( $F = 4.14$ ,  $df = 2/838$ ,  $p < .02$ ) and the results are shown in Figure 5. Again male subjects learned about the same under the control condition without music or with baroque music but they improved more with classical music. Female subjects in contrast learned appreciably more with either baroque or classical music than they did without music.

The interaction of suggestion and list easiness was significant on acquisition ( $F = 73.91$ ,  $df = 1/838$ ,  $p < .0001$ ). Subjects showed more of a gain without suggestion, going from a difference score of  $-3.91$  to  $-0.24$  on the easy list than they did with suggestion where they went from  $-3.33$  on a hard list to  $-1.73$  on the easy list with suggestion. The same interaction was significant for retention ( $F = 89.90$ ,  $df = 1/838$ ,  $p < .0001$ ). Similarly, the subjects without suggestion showed a greater improvement, going from a difference score of  $-4.90$  on the hard tests to  $-0.25$  on the easy test. In comparison when subjects received suggestion, scores went from  $-3.86$  on the hard to  $-1.63$  on the easy tests.

The effect of music during quiz and list easiness was significant on acquisition ( $F = 7.13$ ,  $df = 2/838$ ,  $p < .002$ ) and retention ( $F = 5.25$ ,  $df = 2/838$ ,  $p < .006$ ). The biggest differences were for subjects who got classical music between hard and easy lists, and the results are shown in the significant higher order interaction of gender, music during quiz and easiness as shown in Figures 6 and 7. The interaction of gender and list easiness was significant for acquisition ( $F = 17.38$ ,  $df = 1/838$ ,  $p < .0001$ ). Males improved less than females did, going from  $-3.20$  on hard lists to  $-1.06$  on the easy lists. In contrast females improved more, going from  $-4.05$  on the hard lists to  $-0.91$  on the easy lists. The interaction is shown in the higher order significant interaction in the Figure 6. Similarly, the effect of gender and list easiness was significant for retention ( $F = 11.78$ ,  $df = 1/838$ ,  $p < .001$ ). As before females gained more going from hard to easy lists than did males. The results again are shown in Figure 7 for the higher-order action.

The triple interaction of gender, music during quiz and list easiness was significant ( $F = 3.19$ ,  $df = 2/838$ ,  $p < .05$ ) on acquisition difference scores. The data are plotted in Figure 6. The gist of the interaction appears to be that males learned better under the control condition without music on the easy list and they did approximately the same over the three types of music for the hard lists. In contrast the females learned both easy and hard lists best with baroque music as compared to control or classical music.

The interaction of gender, music during quiz and list easiness was also significant ( $F = 3.98$ ,  $df = 2/838$ ,  $p < .02$ ) on retention. The data are plotted in Figure 7 and the gist of the interaction appears to lie in the sex difference. Females learned easy or hard lists best with baroque music whereas male subjects learned hard lists best with classical music, but easy lists best without music.

The interaction effect of gender, music during learning and list easiness was significant ( $F = 3.34$ ,  $df = 2/838$ ,  $p < .05$ ) on acquisition difference scores and the data are plotted in Figure 8. Both sexes learned easy lists best with baroque music and comparably poorer for

both the control and classical music conditions. In contrast the facilitation of baroque music for hard lists was better for male subjects than it was for female subjects.

The interaction of gender, music during learning, and list easiness was significant ( $F = 4.89$ ,  $df = 2/838$ ,  $p < .01$ ) on retention difference scores, with the data plotted in Figure 9. There were no sex differences for easy lists with the best learning occurring with baroque music. In contrast the essence of the interaction showed up with a considerable facilitation of baroque music for male subjects when learning hard lists.

Some theoretical interests center on the interaction effect of music during learning and music during the quiz. In the analysis of covariance, this interaction effect was not significant ( $F = 0.89$ ,  $df = 4/251$ ,  $p = 0.53$ ) for the adjusted acquisition scores; the two music effects were additive but not interactively cumulative. The data were not plotted. However, out of all nine possible treatment combinations of music during learning and during the quiz, the best condition was when subjects learned the list with baroque music and when they took the quiz again with baroque music playing. This is in keeping with the literature on state-state matching; see Schuster & Martin (1980).

Similarly, the interaction between music during learning and during the quiz was not significant on adjusted retention score either ( $F = 1.55$ ,  $df = 4/251$ ,  $p < .19$ ). While not plotted, again the data showed that the best condition of the nine experimental treatments for retention was when subjects had learned the lists with baroque music and when they had taken the first quiz with baroque music and when they had taken the first quiz with baroque music again playing, in keeping again with state-state matching.

Now we turn to results for the minor criteria, the ratings collected during the learning and quiz processes. There were three preliminary affective ratings of feelings made after listening to the first music for three minutes but before learning the lists started. These ratings were how relaxed the subject felt, how happy the subject was, and how well the subject liked the music that they had just listened to. Of these three ratings, only the last, the subjects' liking for their immediate past activity was significant ( $F = 5.17$ ,  $df = 2/252$ ,  $p < .01$ ). The average ratings of the 9 point scale were as follows, control = 5.86, baroque = 6.32, and classical = 5.95. The best rating went to the Baroque music which is in keeping with the acquisition and retention score data.

The same three affective ratings again were administered after the list had been learned and just after listening to the second type of music, for three minutes, and just before taking the quiz. Of these three ratings, only the effect of music was significant for the relaxed rating ( $F = 4.50$ ,  $df = 2/252$ ,  $p < .02$ ). The corresponding relaxed ratings were as follows, control = 5.94, baroque = 5.84, and classical = 5.44. In this

particular case subjects felt the most relaxed under the control condition without music, contrary to our expectations.

Two final ratings were collected after working on each list, these were the pleasantness and alertness ratings. The effect of music during learning significantly affected the pleasantness ratings ( $F = 8.24$ ,  $df = 2/252$ ,  $p < .001$ ). The pleasantness ratings were, control = 5.65, baroque = 6.27, and classical = 5.78, with baroque music having gotten the best pleasantness ratings. Similarly, the effect of music during learning significantly affected alertness ratings ( $F = 9.01$ ,  $df = 2/252$ ,  $p < .001$ ). By music level these alertness ratings were, control = 5.64, baroque = 6.27, and classical = 5.92, with the highest alertness rating going to the baroque musical condition during learning.

The interaction effect of music during learning and music during quiz was significant on pleasantness ratings ( $F = 3.58$ ,  $df = 4/252$ ,  $p < .01$ ), and the data are plotted in Figure 10. The essence of the interaction was that state-state matching occurred, with the highest pleasantness rating going to the condition where subjects heard baroque music both during learning and during the quiz. The result fits in with the acquisition and retention data previously given.

The interaction of music during learning and during quiz also was significant for the alertness ratings ( $F = 4.93$ ,  $df = 4/252$ ,  $p < .002$ ), with the data displayed in Figure 11. Again the highest alertness rating occurred when subjects had heard baroque both during learning and during the quiz, supporting the learning data previously presented.

## DISCUSSION.

The data presented here provide support for Lozanov's contention (1971, 1978) that there is something peculiar about baroque music and its facilitation of learning. Note that we did not fully test Lozanov's contention that the materials to be learned must be presented in two phases before the quiz: the material should be presented first in a dramatic, imaginative style with subjects requested to make imagery of the material to be learned, and then secondly the material should be presented again quietly with eyes closed and the instructor's reading the material to the subjects who are requested to let the images and thoughts previously made flow through their minds as the material is reviewed with baroque music. However, this experiment does provide support for part of Lozanov's contention that baroque music facilitates material to be learned. Obviously, these results should be tried with other examples of classical and baroque music than the two specific pieces utilized in this study. However, since Lozanov talks about baroque and classic music in general, it is felt that the results obtained with the two specific pieces of music used in this study would generalize to other examples of baroque and classical music.



Quantitatively, baroque music during learning resulted in 24% higher acquisition score and 26% higher retention scores than the control condition without music; see Figure 1. The corresponding facilitative data for classical music in Figure 1 were acquisition 12% and retention 15%. Similarly, baroque music during the quiz resulted in 4% higher acquisition scores (and insignificantly 1% higher retention scores) than the control condition without music; see Figure 2. Unfortunately, classical music resulted in 5% worse acquisition scores than no-music (and insignificantly 9% worse retention scores), also shown in Figure 2. Thus our classical music-during-quiz data contradict Blanchard's classical music-during-final data (1979). In contrast, our baroque music data consistently fits in with the sparse literature data. Thus our classical music-during-final data (1979). In contrast, our baroque music data consistently fits in with the sparse literature data.

Next is the general question of why baroque music should provide the learning facilitation that it does. Our secondary affective criteria can help provide this interpretation. In general, the best affective ratings in this study were when baroque music had been used during learning or during the quiz. Subjects in general were the most relaxed, the happiest, and alert with baroque music as compared with classical music or the control condition without music.

There is considerable literature showing that subjects learn best when relaxed in the learning situation. Schuster and Martin (1980) showed with biofeedback-induced tension or relaxation that college student subjects regardless of their chronic anxiety level learned the best in the laboratory situation when they were relaxed before learning, during learning, and during the quiz when given easy lists with the suggestion that learning would be easy. Levonian (1966) reported that film-induced anxiety as measured by skin measurement decrements lead to improved acquisition whereas resistance decrements occurring after anxious film incidents lead to improved retention. Chaney and Andreasen (1972) reported that subjects who had learned muscular relaxation techniques performed significantly better than subjects not taught relaxation. Straughan and Dufort (1969) reported an interaction between relaxation and lesson difficulty in that relaxation prior to acquisition was beneficial for anxious subjects but not others. Hansen and O'Neill (1970) reported that students had the greatest anxiety to difficult task materials and that highly anxious students responded with more anxiety than low trait anxiety students throughout the task, showing a complex relationship between the subjects' trait anxiety and the difficulty of the material to be learned. Crawford (1978) reported that subjects with high achievement needs and low failure expectancy did better in learning achievement as instruction difficulty increased. However, the subjects with low need for achievement and high fear of

failure showed decreased learning as material to be learned increased in difficulty. Campeau (1986) reported an interaction between anxiety and feedback for girls but not for boys; specifically highly anxious girls did better without feedback. Thus, the results of this study of music and learning can be interpreted in the light of studies dealing with relaxation and learning: baroque music relaxed the students and this may have accounted for its facilitation of learning.

We would like to summarize our conclusions against the specific hypotheses stated earlier:

1) In general, in contrast with the previous literature we did not find consistent sex differences; male subjects learned about as well as female subjects in this study.

2) As predicted, the Baroque music played during vocabulary learning did result in significantly better acquisition and retention.

3) As predicted, the baroque music played during the quiz over vocabulary materials just studied produced significantly better acquisition scores and an insignificant trend in this direction for retention scores.

4) We found unexpectedly a significant difference between data collected in the fall vs. the winter quarters. Since this was merely data replication, and all of the other variables were orthogonal or counter-balanced with respect to this one, we chose to ignore this effect. In general, somewhat higher learning and affective ratings obtained for the fall quarter as compared with the winter quarter.

5) Contrary to prediction, the effect of suggestion produced significantly worse acquisition scores when an easy suggestion was given than when it was not. The effect was not significant for the retention.

6) As predicted, we found that words coming from lists previously shown to be easy were learned both with significantly higher acquisition and retention scores as compared with lists previously shown to be harder than average.

7) As expected, subjects did improve with practice as shown by significantly higher acquisition and retention scores in the last block of practice vs. the first block.

In conclusion, this study has provided some support for the contention that Baroque music played during vocabulary learning and during a quiz over that vocabulary significantly facilitates learning. This finding is partially interpretable as a relaxation facilitative effect of such music on the learner.

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Figure 1

The effect of music during learning on adjusted acquisition and retention scores.

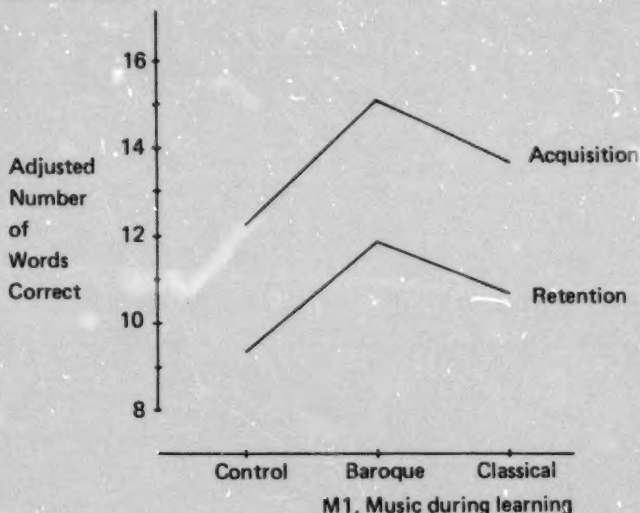


Figure 2

Effect of music during quiz on adjusted acquisition and retention scores.

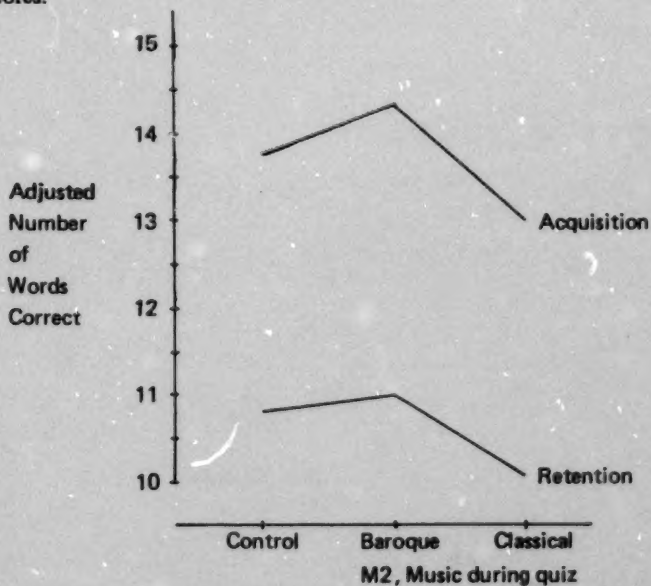


Figure 3

The effects of music during quiz, suggestion and practice on retention difference scores. (Note, top of bar is second practice block average, bottom is first block.)

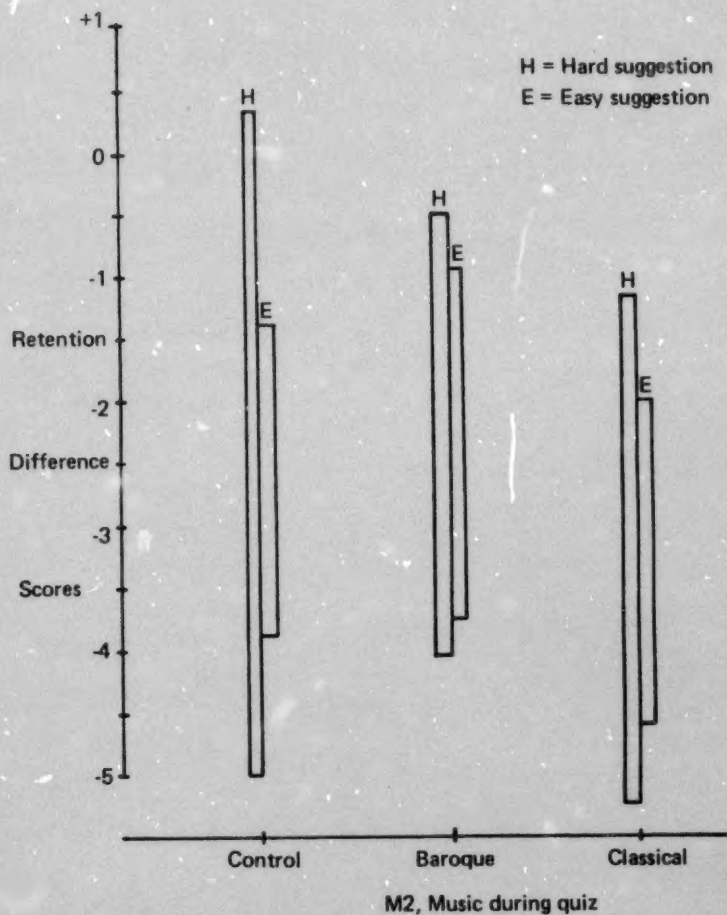


Figure 4

The effect of gender, music during learning, and practice on acquisition difference scores. (Note, top of bars is second practice block average, bottom is first block.)

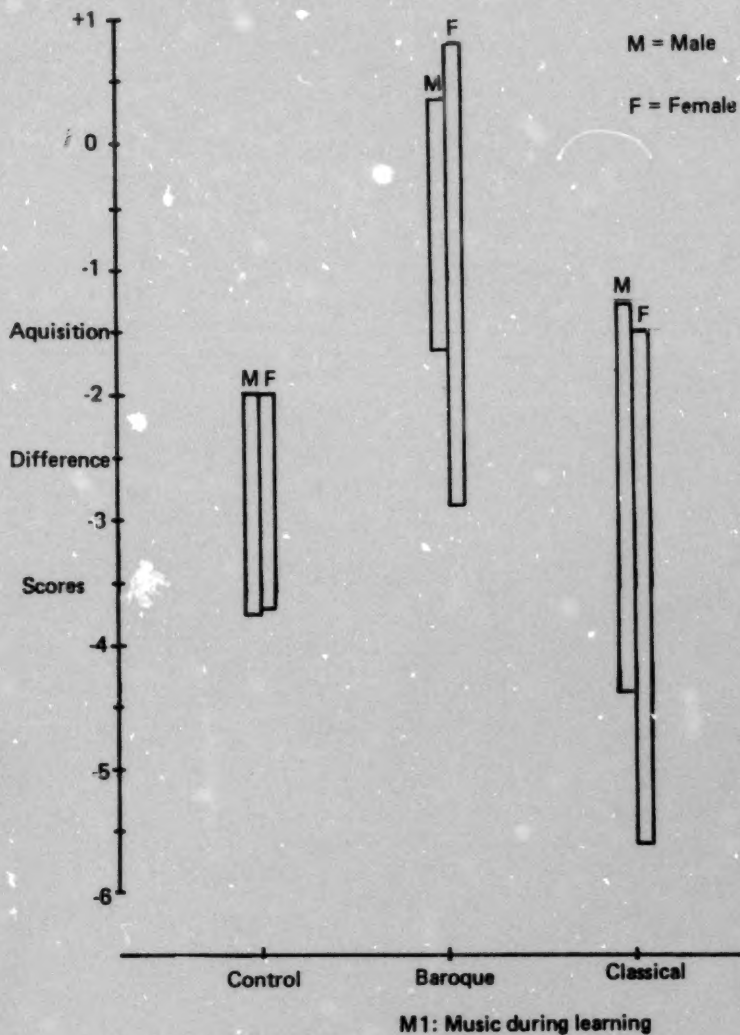




Figure 5

The effect of gender, music during learning and practice on retention difference scores. (Note, top of bar is average of second practice block, bottom is first block.)

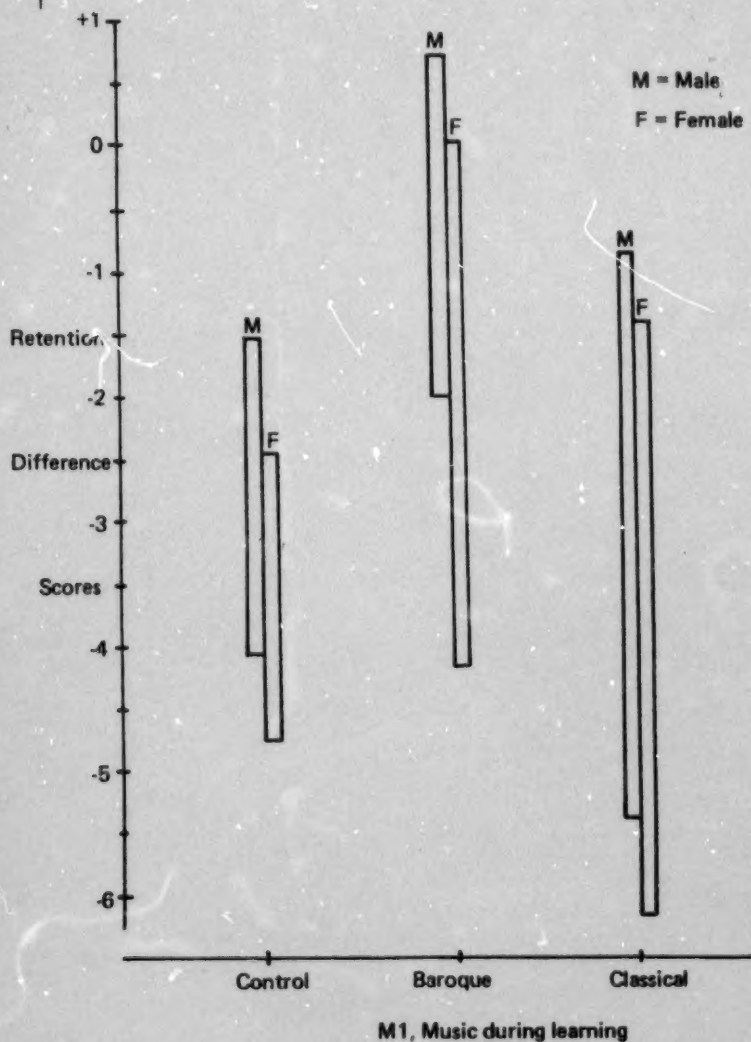


Figure 6

The effect of gender, music during quiz and list easiness on acquisition difference scores.

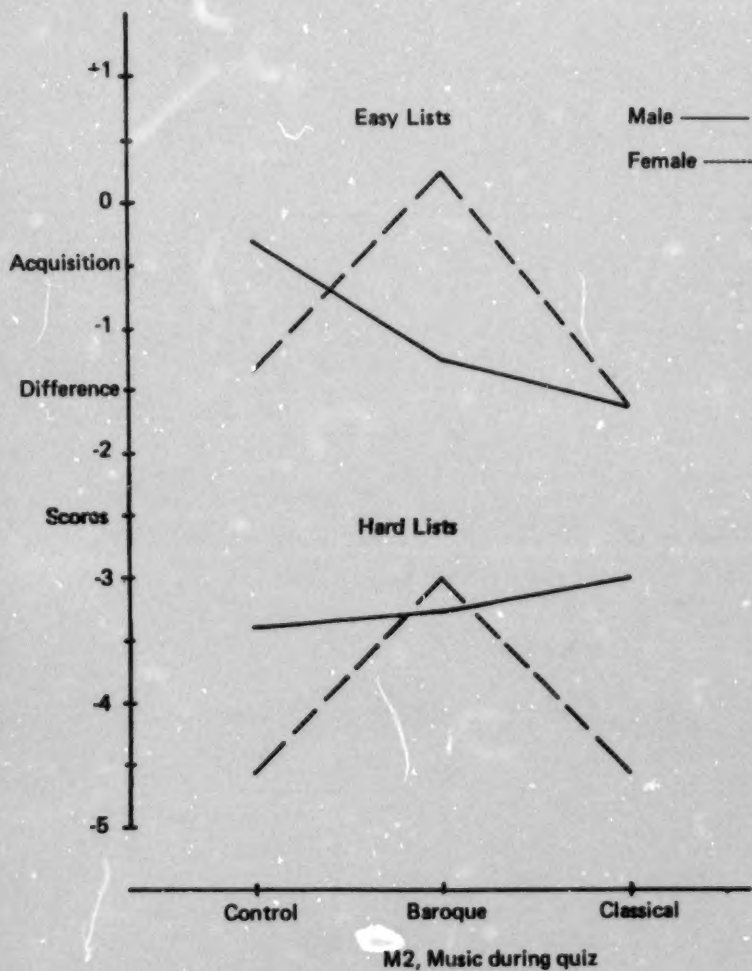


Figure 7

The effect of gender, music during quiz and list easiness on retention difference scores.

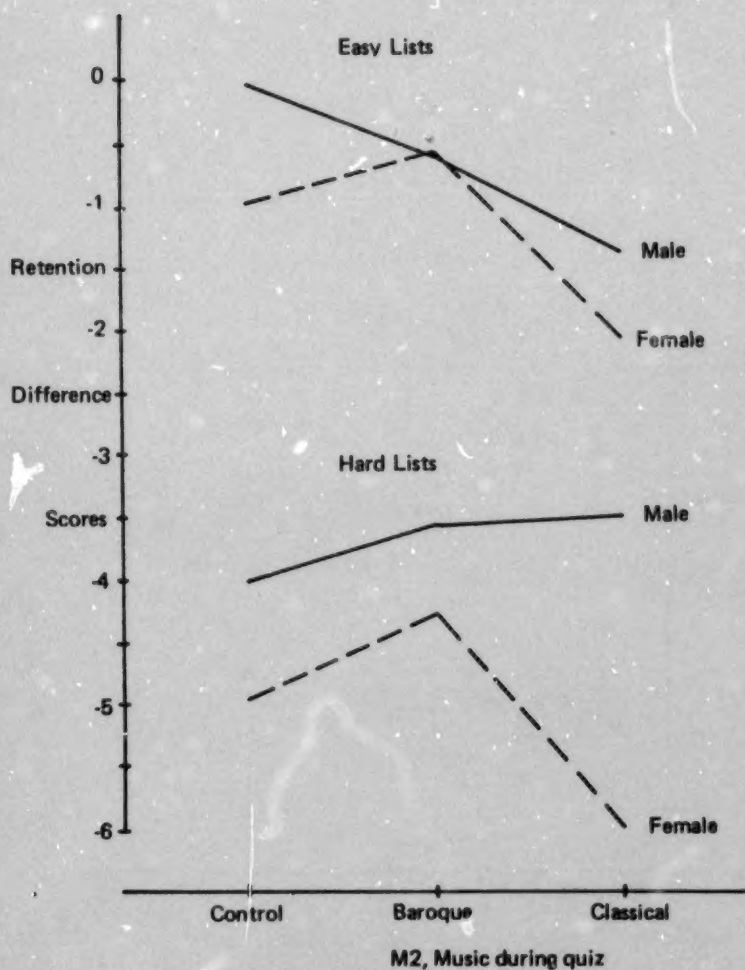


Figure 8

The effect of gender, music during learning and list easiness on acquisition difference scores.

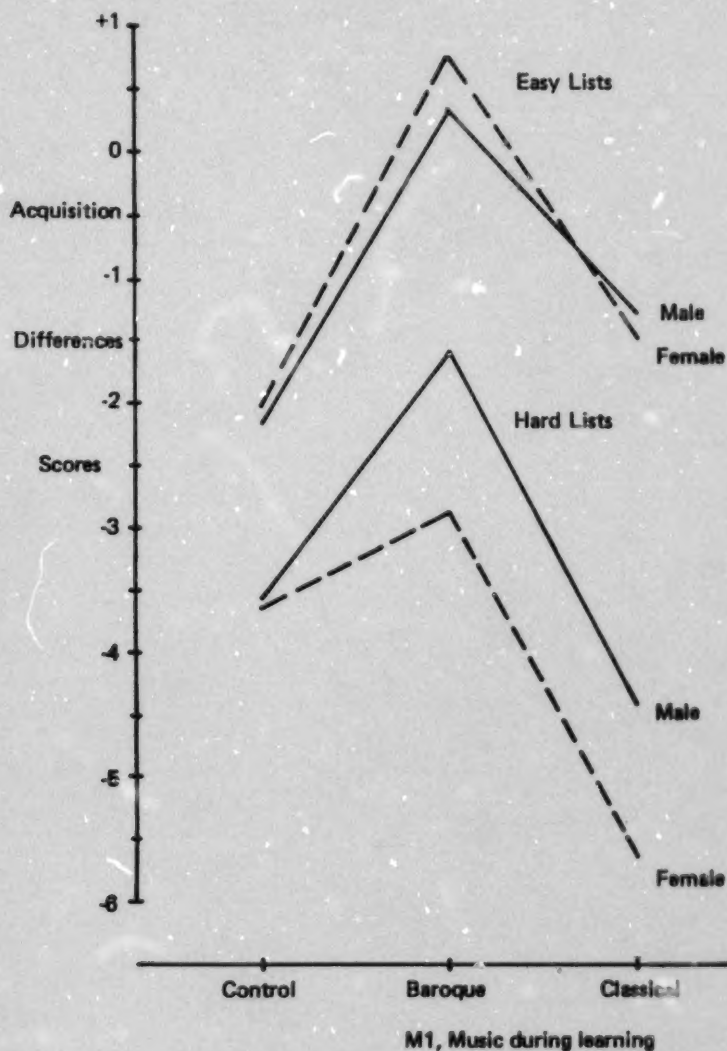


Figure 9

The effect of gender, music during learning and list easiness on retention difference scores.

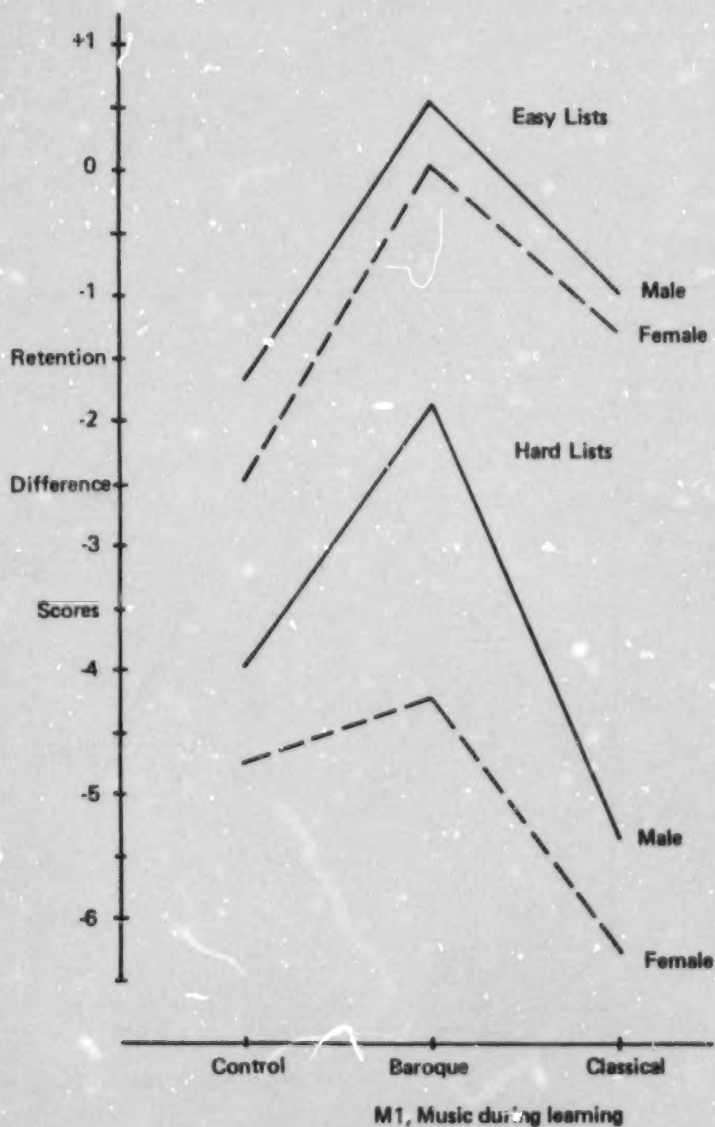


Figure 10

Effect of music during learning and during quiz on pleasantness ratings after quiz.

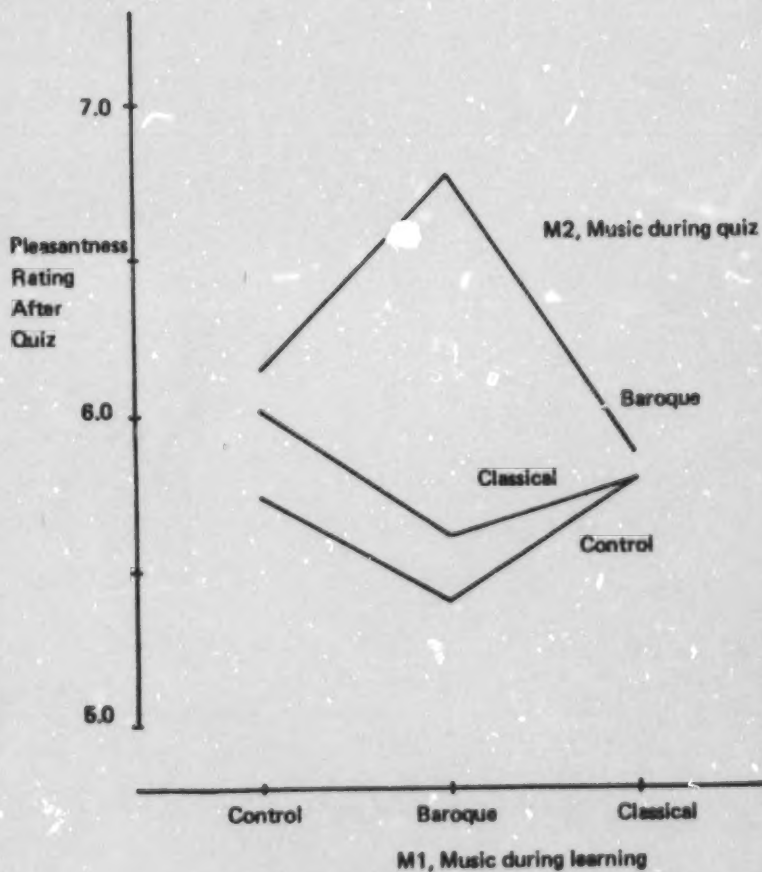
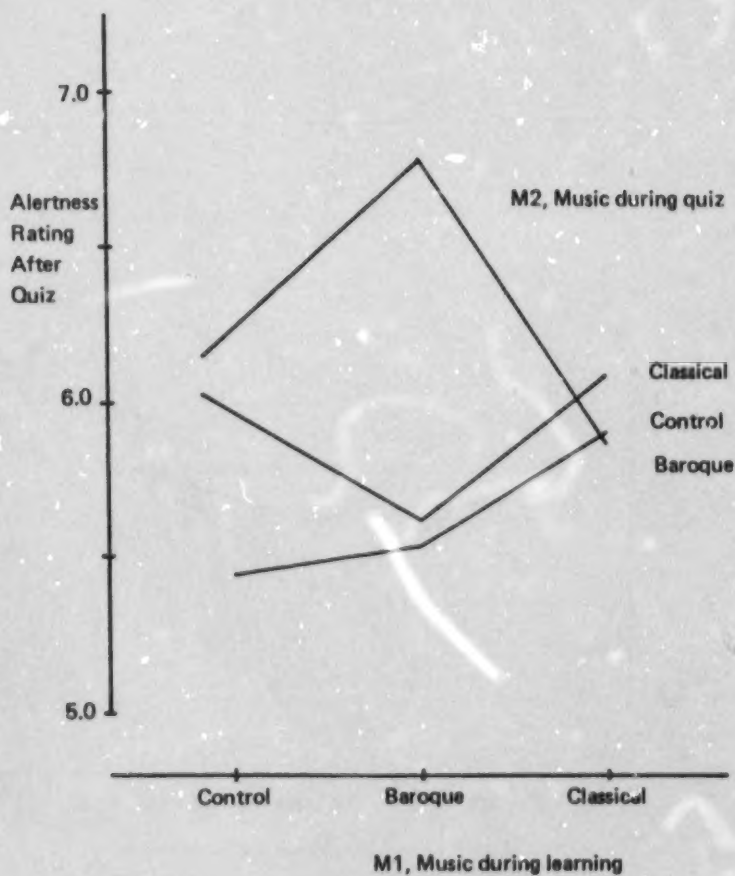




Figure 11

Effects of music during learning and during quiz on alertness ratings after quiz.



La musique et l'acquisition du vocabulaire

Cette étude évalue l'effet de trois sortes de musique différentes sur l'acquisition du vocabulaire dans le contexte d'autres variables indépendantes, qui se trouvaient être l'une des trois sortes de musique entendue pendant l'acquisition; une des trois sortes de musique entendue pendant le quiz; le sexe du sujet; l'utilisation d'une suggestion facile; une liste facile; et la pratique. Le résultat de l'acquisition d'un test préliminaire facile a été utilisé comme une covariation de l'analyse de covariance pour rajuster les résultats du test d'acquisition et de mémorisation dus à un nombre significatif de sujets qui se sont dirigés non par hasard vers les différentes combinaisons de présentation de la musique dans l'acquisition du vocabulaire. Il existait deux principales variables dépendantes ou critères: premièrement le résultat de l'acquisition comme déterminé par le nombre de mots définis correctement sur le quiz administré juste après l'acquisition et deuxièmement le résultat de mémorisation ou le nombre de mots utilisés correctement la semaine suivante. Huit critères affectifs mineurs ont été donnés pour faciliter l'interprétation des résultats cognitifs. Les sujets étaient 288 étudiants de collège recrutés dans les cours de psychologie du programme d'études sous gradées de l'université; un crédit supplémentaire leur a été accordé pour avoir participé à la recherche. Quatre listes séquentielles de mots de vocabulaire à apprendre et à acquérir ont été données à des sujets des dix-huit différents groupes de présentation. Comme on s'y attendait à la revue de la documentation, l'acquisition était meilleure lorsque la musique baroque était entendue pendant l'acquisition ou pendant le quiz à propos de ce vocabulaire. On a rapporté et examiné plusieurs interactions significatives. En règle générale, les évaluations affectives (de même que les résultats cognitifs) étaient généralement meilleures dans les conditions de la musique baroque.

#### Musik und Vokabeln lernen

Diese Studie bewertet die Wirkung von drei verschiedenen Arten von Musik auf das Vokabeln lernen im Kontext mit anderen unabhängigen Variablen. Die unabhängigen Variablen waren eine von drei Arten von Musik, die während des Lernens gespielt wurde, außerdem eine von drei Arten von Musik, die während des Tests gespielt wurde. Geschlecht der Versuchspersonen, der Gebrauch einer einfachen Suggestion, Einfachheit der Wortliste und Übung wurden ebenso als unabhängige Variablen einbezogen.

Die Erwerbungsanzahl auf einer vorläufigen einfachen Prüfung wurde als Kovariat in der Kovarianzanalyse gebraucht, um die Erwerbungs- und Behaltenszahlen zu regulieren, weil die Versuchspersonen eine signifikante nicht-zufällig auf Fähigkeiten im Vokabeln lernen fundierte Selbsterkennung in den verschiedenen Zusammensetzungen der Musikbearbeitung mitwirkten.

Es gab zwei hauptabhängige Variablen oder Kriterien--erstens die Erwerbungsanzahl, die durch die Zahl der richtig definierten Wörter im Quiz, das gerade nach dem Lernen gegeben wurde, festgesetzt wurde, und zweitens, die Behaltenszahl oder die Zahl der Wörter, die eine Woche später richtig zusammengebracht wurden.

Es wurden acht Nebenkriterien dargestellt, die helfen, die kognitiven Resultate zu interpretieren. Versuchspersonen waren 288 Hochschulschüler, die sich aus Psychologiekursen der Universität rekrutierten. Den Studenten wurden zusätzliche Leistungspunkte angerechnet, wenn sie an dieser

Forschungsstudie teilnehmen. Versuchspersonen in 18 verschiedenen Versuchsgruppen wurden in zeitlichen Abständen vier Listen von Vokabeln gegeben, die sie studieren und lernen sollten. Wie aus der Fachliteratur zu entnehmen war, konnte der beste Lerneffekt mit Barockmusik während des Vokabelnlernens oder des Tests erzielt werden. Viele signifikante Interaktionen wurden berichtet und erörtert. Im Allgemeinen haben die affektiven Bewertungen den kognitiven Bewertungen Unterstützung verschaffen, da die affektiven Bewertungen gewöhnlich beim Zustand mit Barockmusik sich am besten zeigten.

#### APRENDIZAJE DE MUSICA Y VOCABULARIO

Resumen: Este estudio evaluó el efecto de tres tipos de música diferentes en el aprendizaje de vocabulario, en el contexto de otras variables independientes, las cuales eran uno de los tres tipos de música que el sujeto escuchó durante el proceso de aprender, uno de los tres tipos de música que escuchó durante el examen, el sexo de los sujetos, el uso de la sugestión, la facilidad de la lista, y la práctica. El grado de adquisición en un examen preliminar fácil fue utilizado como co-variable en el análisis de covariabilidad para ajustar los resultados del examen de adquisición y retención debido a que los sujetos se auto asignaron, no aleatoriamente, (a un nivel significativo) a las diferentes combinaciones de tratamiento musical. Hubo dos variables dependientes, o criterios primarios, el grado de adquisición medido por el número de palabras definidas correctamente en el examen administrado inmediatamente después de haber sido estas enseñadas y segundo, el grado de retención o el número de palabras pareadas correctamente una semana más tarde. Hubo ocho criterios secundarios afectivos incluidos para interpretar los resultados cognitivos. Los sujetos fueron 288 estudiantes universitarios, matriculados en cursos de psicología, quienes recibieron crédito por participar en esta investigación. A los sujetos en 18 grupos diferentes de tratamiento se les dio en secuencia, cuatro listas de palabras para estudiar y aprender. Como era de esperarse, basandonos en estudios previos, el aprendizaje fue máximo cuando el sujeto escuchó música barroca mientras aprendía y mientras se examinaba. En general los resultados afectivos apoyaron los resultados cognitivos ya que los primeros también fueron mejores cuando se escuchó música barroca.

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## **The Effects of Relaxation Training And Music on Creativity**

James Gamble  
Darlene Gamble  
Gerald Parr  
Owen Caskey

### **Abstract**

Educators from many disciplines, and those in art education in particular, have sought inexpensive and available methods to facilitate creativity. Music and relaxation are two components of Suggestive-Accelerative Learning and Teaching (SALT), a method of pedagogy which has emphasized the importance of creativity. These two components were the focus of this study. Undergraduate beginning art students were randomly assigned to one of three treatments: music only, music plus relaxation training, or a no treatment control group. Seven measures from the *Torrance Test of Creative Thinking* and three ratings from a panel of judges were used to assess outcomes of the study. Analysis of Covariance revealed that three of Torrance scales were significant at posttesting: the Sum of Scores, Fluency, and Originality. Multiple comparisons revealed that the relaxation plus music group was significantly more creative than the control condition. The panel ratings of student drawings at posttesting failed to indicate significant differences, and all differences were nonsignificant at follow-up except a measure of Elaboration. Music and relaxation might prove more potent over a longer period of time as part of a regular class procedure.

The purpose of this study was to determine the effects of relaxation training and music background on figural creativity among undergraduate students enrolled in a beginning art class. Creativity is of central importance to the arts, as it is in many other contexts (Bronowski, 1978; Guilford, 1967; Martindale, 1975; Maslow, 1970; Torrance, 1974; and Wagner, 1980). Educators and learning theorists ask if creativity can be stimulated, enhanced and trained. Several writers believe it can (Edwards, 1972; Edwards, 1978; Jung, 1968; Kirk, 1972; Luthe, 1976; Torrance, 1972; and Wagner, 1980). Others are more tentative on this questions (Mansfield, Busse, and Krepelka, 1978).

Part of the difficulty with creativity investigation may arise from disagreement over how it should be defined. Some see it as a universal characteristic (Maslow, 1970) whereas others view it as a vague and confusing construct which is rare and illusive (Ausubel, 1968). Torrance (1974), a dedicated investigator of creativity, describes the creative

process as one of becoming aware of disharmonies, identifying problems, formulating hypotheses, and testing-retesting their effectiveness.

Suggestive-Accelerative Learning and Teaching (SALT) is a method of pedagogy that should stimulate creativity. SALT is the Americanized version of Suggestopedia, a method to enhance learning through the use of psychical relaxation, music, multisensory input, and positive suggestions (Caskey, 1980). Visual imagery is used to expand memory and to develop perceptive potential; anxiety and stress are minimized so concentration can increase (Bancroft, 1975; Racle, 1978; Schuster, Benitez-Borden, and Gritton, 1976).

There have been two studies examining the effects of Suggestopedia and SALT on creativity. Edwards (1980) found an increase of creativity using SALT methods with low and middle socioeconomic status fifth and eighth graders in a public school classroom. Novakov (1975) studied subjects' "cognitive-communicative and creative aspect" of speech output as a "creative way of expressing their own ego." The Novakov study found a significant relationship linking Suggestopedia with creativity, but the findings are limited because the study lacked a control group.

The present study focused on two components of SALT, relaxation training and music background. Relaxation has been found to have a positive effect on creative thinking and production in a number of studies (Bernstein and Borkovec, 1973; Duria, 1975; Edwards, 1972; Gowan, 1978; Luthe, 1965; Maltz, 1960; and McKim, 1974). Caskey (1980) asserts that relaxation training, like meditation, fosters a psychological and emotional openness and involvement.

The research on the effects of music on creativity has been somewhat mixed. Several investigators have reported significant results (Kaltsounis, 1973; Lynch and Swink, 1967; and Taylor and Paperte, 1958) whereas others have found no positive impact (Kopp, 1958; Newham, 1964; and Sanders, Tedford, and Hardy, 1977). Those theorists who express favorable views regarding music as a facilitator of creativity assert that it can activate reserves of the conscious and unconscious mind (Bancroft, 1975; Caskey, 1980; and Schuster, Benitez-Borden, and Gritton, 1976). The music of choice for creative stimulation is instrumental music that is not overpoweringly loud or fast in tempo, baroque music for example (Caskey, 1980).

Thus, although there is support for both relaxation and music as facilitative agents of creativity, the findings are mixed and inclusive. Prior to a study by Schuster (1980), there was no published research concerning the effectiveness of SALT in art creativity. The present study addresses the effects of two components of SALT, relaxation and music, on figural creativity. The study was designed to determine if the

effects of music and relaxation would be additive and if these effects would hold for two types of creativity measures, the *Torrance Tests of Creative Thinking*, figural battery (Torrance, 1966) and an evaluation of each subject's drawings for elaboration and originality by a panel of three art judges.

## Method

### *Subjects and Design*

Subjects consisted of 54 undergraduates enrolled in an introductory art drawing class. The students included art majors and non-majors. A consent form was signed by each student.

A compromise experimental group design with a control group was used for this study (Kerlinger, 1973, p. 372). Type of treatment was randomly assigned by class after regular registration at the university. An analysis of variance (ANOVA) of the subjects' age and grade point average were used to determine the similarity of treatment groups. Classes receiving the same treatment were pooled to increase power.

### *Procedure*

Treatment was randomly assigned by class: music background, music background plus relaxation training, or no treatment control. Each treatment group received an orientation during which consent forms were signed and pretest data were collected. A one-hour session was provided to all treatment groups with the music and relaxation group receiving deep muscle relaxation training (Jacobson, 1938). The music only group was introduced to various music selections, e.g. "Baroque Guitar," Julion Bream; "Sachdev in Concert: Raga Bhupali," Sachdev; and "Music for Meditation I," Tom Scott. The no treatment control group was given a talk on the importance of research and was told that their assistance in completing various tests would be a valuable contribution to science. Participants receiving the relaxation training were asked to practice at home once each day. Twenty minutes for group relaxation by audio tape was set aside during the first part of each class meeting in the music plus relaxation training group. Music was played during the entire class in both the music only and the music plus relaxation training groups. All classes irrespective of type of treatment met twice a week for two and one-half hours. The treatment lasted five weeks.

### *Measures*

Figural creativity, the dependent variable, was obtained using the

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raw scores from the streamlined scoring method on the *Torrance Tests of Creative Thinking* figural battery (Torrance, 1966, 1979, 1980). This study used the Figural battery of the test, forms A and B. The scoring procedure yielded five criterion-referenced measures and thirteen norm-referenced scores. All tests were scored by the Torrance Testing Center, Athens, Georgia.

A second measure of creativity was taken from a panel of three judges, who independently rated three separate drawings of each subject using Torrance's criteria of elaboration and originality as a common reference. Each judge was experienced and trained in art work. The interscorer reliability of the three-judge panel was 0.86 for Total Score, 0.87 for Elaboration, and 0.84 for Originality.

All classes were pretested on the *Torrance Tests* with Form A. Form B was administered immediately following the five-week treatment period, and Form A was again administered as a seven-week follow-up. Three drawings were collected, one before treatment, one after treatment, and one as a follow-up to treatment on the same time schedule as the Torrance tests. The ratings of the panel of judges was based on a four-point scale. Judges were blind regarding subject assignment to treatment group.

Analysis of covariance (ANCOVA) was used to determine the main effects of treatment.

## Results

### Pretest Analyses

The ANOVA on grade point average and age revealed no significant differences among groups,  $F(2, 51) = 2.38, P > .05$  and  $F(2, 51) = 1.14, P > .05$ . ANOVA on each of the pretest scores of figural creativity on the Torrance Test and by judges' ratings revealed no significant difference among groups. A summary of  $F$ -ratios and probability levels for pretest scores appears in Table 1.

TABLE 1  
Summary of  $F$ -Ratios and Probability Levels for Analyses  
of Variance on Pretest Scores

| Dependent variable                                 | $F$  | $P$  |
|----------------------------------------------------|------|------|
| Sum of TTCT Norm-Referenced Scores                 | 0.46 | 0.63 |
| Fluency                                            | 0.17 | 0.84 |
| Originality                                        | 0.54 | 0.50 |
| Abstractness of Titles                             | 2.89 | 0.06 |
| Elaboration                                        | 1.16 | 0.32 |
| Resistance to Premature Closure                    | 0.33 | 0.72 |
| Sum of 13 Criterion - Referenced<br>Variables TTCT | 0.10 | 0.90 |
| Sum of Drawings Scores by Panel                    | 1.50 | 0.23 |
| Age                                                | 2.38 | 0.10 |
| Grade Point Average                                | 1.14 | 0.33 |

### Posttest analyses

Three of 7 subtest scores on the *Torrance Tests* reached significant from ANCOVA. The three were: the Sum of Five Norm-referenced Scores,  $F(2, 50) = 3.14, P < .05$ ; Fluency,  $F(2, 50) = 4.56, P < .02$ ; and Originality,  $F(2, 50) = 3.58, P @ .04$ . Ratings by the panel of judges were nonsignificant. Table No. 2 presents a summary of these  $F$  statistics.

TABLE 2  
Analyses of Covariance Using Pretest as the  
Covariate on Posttest

| Source of variation                                    | df | MS     | F    | Probability<br>of F |
|--------------------------------------------------------|----|--------|------|---------------------|
| Sum of 5 Norm-Referenced                               |    |        |      |                     |
| TTCT Measures                                          | 2  | 585.22 | 3.14 | 0.05*               |
| Fluency                                                | 2  | 101.86 | 4.56 | 0.02*               |
| Originality                                            | 2  | 59.36  | 3.58 | 0.04*               |
| Abstractness of Titles                                 | 2  | 19.04  | 1.04 | 0.36                |
| Elaboration                                            | 2  | 2.80   | 0.35 | 0.71                |
| Resistance to Premature<br>Closure                     | 2  | 17.73  | 0.97 | 0.39                |
| Sum of 13 Criterion-<br>Referenced TTCT<br>Measures    | 2  | 12.92  | 1.50 | 0.23                |
| Sum of Drawings<br>Scores by Panel                     | 2  | 2.56   | 0.87 | 0.42                |
| Elaboration Scores of<br>Drawings as Rated<br>by panel | 2  | 0.34   | 0.47 | 0.63                |
| Originality Scores of<br>Drawings as Rated<br>by Panel | 2  | 1.04   | 0.93 | 0.40                |

\* $p < .05$ .

The adjusted means by treatment group on the Sum of the Five Norm-referenced Scores were: music and relaxation (69.98), music only (65.41), and control (59.10). Results of Duncan's Multiple Range Test indicated no significant difference between the control and the music group ( $P > .05$ ); however, a significant difference was found between the control and the music plus relaxation group ( $P < .05$ ).

The adjusted means on Fluency were: music and relaxation (18.97); music only (16.63); and control (14.40). Again, the Duncan's Multiple Range Test indicated that the only significant difference was between the control group and the music plus relaxation group ( $P < .05$ ).

The adjusted means on Originality were: music and relaxation (16.32); music (13.33), and control (12.29). As in the two previous comparisons, the relaxation plus music group differed significantly from the control group. Tables 3, 4, and 5 give the means and standard deviations by treatment group for the Sum of Five Norm-referenced Measures, Fluency, and Originality.

**TABLE 3**  
**Means and Standard Deviations of Pretest, Posttest, and Follow-Up**  
**Measures from the Torrance Tests of Creativity Figural**  
**Battery by Treatment Groups**

| Measures         | Group 1<br>Control<br>(N = 15) | Group 2<br>Music<br>(N = 17) | Group 3<br>Music and Relaxation<br>(N = 22) |
|------------------|--------------------------------|------------------------------|---------------------------------------------|
| <b>Pretest</b>   |                                |                              |                                             |
| Mean             | 62.93                          | 58.94                        | 63.64                                       |
| SD               | 16.30                          | 15.30                        | 15.78                                       |
| <b>Posttest</b>  |                                |                              |                                             |
| Mean             | 59.53                          | 64.06                        | 70.73                                       |
| SD               | 14.29                          | 11.52                        | 18.07                                       |
| Adjusted Means   | 59.10                          | 65.41                        | 69.98                                       |
| <b>Follow-Up</b> |                                |                              |                                             |
| Mean             | 70.27                          | 72.53                        | 66.55                                       |
| SD               | 11.35                          | 15.74                        | 17.35                                       |
| Adjusted Means   | 69.97                          | 73.45                        | 66.04                                       |



**TABLE 4**  
**Means and Standard Deviations of Pretest, Posttest, and Follow-Up**  
**Measures of Figural Fluency by Treatment Groups**

|                | Group 1<br>Control<br>(N = 15) | Group 2<br>Music<br>(N = 17) | Group 3<br>Music and Relaxation<br>(N = 22) |
|----------------|--------------------------------|------------------------------|---------------------------------------------|
| Pretest        |                                |                              |                                             |
| Mean           | 16.60                          | 15.82                        | 16.82                                       |
| SD             | 4.79                           | 5.55                         | 5.61                                        |
| Posttest       |                                |                              |                                             |
| Mean           | 14.47                          | 16.35                        | 19.14                                       |
| SD             | 5.36                           | 5.06                         | 5.36                                        |
| Adjusted Means | 14.40                          | 16.63                        | 18.97                                       |
| Follow-Up      |                                |                              |                                             |
| Mean           | 18.47                          | 20.47                        | 18.27                                       |
| SD             | 3.48                           | 7.27                         | 6.74                                        |
| Adjusted Means | 18.41                          | 20.69                        | 18.14                                       |

**TABLE 5**  
**Means and Standard Deviations of Pretest, Posttest, and Follow-Up**  
**Measures of Figural Originality by Treatment Groups**

| Measures       | Group 1<br>Control<br>(N = 15) | Group 2<br>Music<br>(N = 17) | Group 3<br>Music and Relaxation<br>(N = 22) |
|----------------|--------------------------------|------------------------------|---------------------------------------------|
| Pretest        |                                |                              |                                             |
| Mean           | 13.20                          | 12.00                        | 11.91                                       |
| SD             | 3.28                           | 3.71                         | 4.56                                        |
| Posttest       |                                |                              |                                             |
| Mean           | 12.93                          | 13.12                        | 16.05                                       |
| SD             | 4.15                           | 4.11                         | 5.88                                        |
| Adjusted Means | 12.29                          | 13.33                        | 16.32                                       |
| Follow-Up      |                                |                              |                                             |
| Mean           | 14.60                          | 14.94                        | 13.41                                       |
| SD             | 3.74                           | 4.62                         | 5.44                                        |
| Adjusted Means | 14.28                          | 15.04                        | 13.54                                       |

### Follow-Up

Only one measure showed significant differences on the follow-up. With the pretest scores as the covariate, ANCOVA of Elaboration yielded a significant effect,  $F(2, 50) = 3.20, P < .05$ . The adjusted means and standard deviations for Elaboration were: music (13.43, 2.67), music and relaxation (11.83, 3.04), and control (11.76, 2.71). The music only and control group were significantly different,  $P < .05$ , whereas other comparisons failed to reach significance. A summary of the ANCOVAs for the follow-up appears in table No. 6.

TABLE 6  
Analyses of Covariance Using Pretest as Covariate  
on Follow-Up Score

| Source of variation                              | df | MS     | F    | Probability of F |
|--------------------------------------------------|----|--------|------|------------------|
| Sum of Norm-Referenced TTCT Measures             | 2  | 178.40 | 0.82 | 0.45             |
| <sup>1</sup> Fluency                             | 2  | 26.32  | 0.74 | 0.48             |
| Originality                                      | 2  | 12.74  | 0.60 | 0.55             |
| Abstractness of Titles                           | 2  | 10.59  | 0.44 | 0.65             |
| Elaboration                                      | 2  | 17.54  | 3.20 | 0.05*            |
| Resistance to Premature Closure                  | 2  | 8.32   | 0.59 | 0.56             |
| Sum of 13 Criterion-Referenced TTCT Measures     | 2  | 3.26   | 0.37 | 0.69             |
| Sum of Drawings Scores by Panel                  | 2  | 5.08   | 2.04 | 0.14             |
| Elaboration Scores of Drawings as Rated by Panel | 2  | 1.59   | 2.43 | 0.98             |
| Originality Scores of Drawings as Rated by Panel | 2  | 0.99   | 1.13 | 0.33             |

<sup>1</sup> Not used for analysis. Did not meet assumption of homogeneity of slopes.

\*  $p < .05$ .

## Discussion

Relaxation training and music are relatively inexpensive and available resources. If their value, either separately or together, as a stimulant of creativity could be established, the benefits could be enjoyed by educators in many disciplines. Suggestopedia, and its derivative, SALT, provide a theoretical foundation for believing that relaxation and music are conditions which should facilitate creativity. The present study attempted to establish the effects of relaxation training and music on the figural creativity of undergraduate art students.

Results from posttesting appear to indicate that relaxation training contributed additively to treatment effects. Three subtests on the *Torrance Tests* were significantly higher for the music plus relaxation group; apparently, the music alone group was not a sufficient stimulant for creativity as this group did not differ significantly from the comparison group. After seven weeks without the input of music and/or relaxation, the groups did not differ significantly except on one subtest. Thus, as expected based on SALT, music and relaxation appear to be situational catalysts of creativity. The Hawthorne effect does not seem to account for these differences. The comparison group was told that they were participants in a research study and that their assistance would help science. Also, the Hawthorne effect does not account for the differences in effect found between the music plus relaxation and the music alone groups.

Panel ratings of participants' drawings failed to indicate treatment effects. Agreement among the judges was high with interscorer reliability coefficients ranging from a low of 0.84 for Originality to a high of 0.87 for Elaboration. It appears quite likely that the length of treatment, five weeks, was too brief. A longer treatment period, possibly a minimum of a full 16-week semester, might be more potent. It is also possible that students felt reluctant to be creative knowing that their drawings would be evaluated by a panel of experts. If this were true, it nevertheless demonstrates that neither music and relaxation nor music alone were able to counteract evaluation apprehension.

We are cautiously optimistic by the findings of this study. There were significant differences at posttesting, and these differences tended to support the value of relaxation training and music as facilitators of figural creativity. We believe the potency of music and relaxation would be enhanced if they were integrated into the classroom routine over a full semester.

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## LES EFFETS DE LA RELAXATION ET DE LA MUSIQUE SUR LA CREATIVITE.

Les éducateurs de nombreuses disciplines, et en particulier ceux de l'enseignement de l'art, ont recherché des méthodes bon marché et accessibles dans le but de faciliter la créativité. La musique et la relaxation sont deux composants de SALT, méthode de pédagogie qui insiste sur l'importance de la créativité. Ces deux composants sont l'objet de cette étude. Des étudiants d'art de première année ont été choisis au hasard pour l'une des trois expérimentations suivantes: musique seulement, musique et relaxation, ou groupe non dirigé. Sept mesures du "Torrance Test of Creative Thinking", et trois estimations d'un jury ont été utilisées afin d'évaluer les résultats de l'étude. Une analyse de Covariance a révélé que trois des échelles de Torrance étaient significatives après l'examen final: le Total des Résultats, la Facilité de Communication Orale, et l'Originalité. Des comparaisons multiples ont révélé que les groupes de relaxation et de musique étaient bien plus créatifs que les groupes non dirigés. Les évaluations des étudiants après les tests n'ont pas révélé de différences significatives. Toutes les différences étaient sans importance par la suite, sauf une mesure d'Elaboration. La musique et la relaxation pourraient s'avérer plus marquantes sur une période plus longue lors d'une procédure normale de classe.

Die Wirkungen von Entspannungstraining und Musik auf die Kreativität  
Erzieher in vielen Lernfächern, und besonders Kunst-  
zieher, suchen immer billige und leicht zugängliche  
Methoden, um Kreativität zu fördern. Musik und Entspannung  
sind zwei Komponenten von S.A.L.T., einer Methode der  
Pädagogik, die die Wichtigkeit der Kreativität betont hat.  
Diese zwei Komponenten waren das Thema dieser Arbeit.  
Studenten im ersten Jahr ihres Kunststudiums waren  
zufallsmäßig in eine von drei Arten von Behandlung  
eingeteilt: nur Musik, Musik plus Entspannungstraining  
oder einer Kontrollgruppe ohne besondere Behandlung. Es  
wurden sieben Messungen vom Torrance Test of Creative  
Thinking (Torrance Test des kreativen Denkens) und drei  
Bewertungen eines Sachverständigenausschusses verwendet,  
um die Resultate der Studie zu bewerten. Eine Kovarians-  
analyse zeigte, daß drei der Torranceskalen beim  
Nachprüfen signifikant waren: die Summe der Punktzahlen,  
fließendes Sprechen und Originalität. Mehrfache Vergleiche  
zeigten, daß die Gruppe mit Entspannung und Musik  
bedeutungsvoll mehr Kreativität zeigte als die Kontroll-  
gruppe. Die Bewertungen der Studentenzeichnungen, die vom  
Sachverständigenausschuß ausgeführt wurden, zeigten  
keine signifikanten Unterschiede beim Nachtest, und alle  
Unterschiede waren bei Weiterverfolgung nicht signifikant,  
außer einer Bewertung von Elaboration. Musik und  
Entspannung könnten sich vielleicht wirksamer zeigen,  
wenn sie über eine längere Periode als Teil eines gewöhn-  
lichen Unterrichtsausgedehnt werden.

## LOS EFECTOS DEL ENTRENAMIENTO DE RELAJACION Y MUSICA SOBRE LA CREATIVIDAD

Los educadores de muchas disciplinas, y aquellos en la educación del arte en particular, han buscado un método económico y accesible para facilitar



la creatividad. La música y la relajación son dos componentes de Aprendizaje y Enseñanza Sugestiva-Acelerada (SALT), un método pedagógico que enfatiza la importancia de la creatividad. Estos dos componentes fueron el enfoque de este estudio. Los estudiantes de arte a nivel universitario fueron asignados al azar a uno de tres grupos de tratamiento: 1) música solamente 2) música más relajamiento 3) grupo control sin ningún tratamiento. Siete medidas del examen "TORRANCE TEST OF CREATIVE THINKING" y tres clasificaciones de un panel de jueces fueron utilizadas para evaluar los resultados del estudio, el análisis de covariantes reveló que tres escalas TORRANCE fueron significativas en los post-exámenes: "The Sum of Scores", "Fluency", and "Originality" (La suma total, Fluidez y Originalidad). Múltiples comparaciones revelaron que el grupo que tuvo relajación más música fue significativamente más creativo que el grupo control. Las clasificaciones que dió el panel a los estudiantes en el post-examen no indicó diferencias significativas, con la excepción de la categoría "Elaboration" (Elaboración). La música y la relajación podrían ser más potentes si se usaran durante un período más largo y como parte integral de la clase.

## **Calculators and Microcomputers for Exceptional Children**

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### **Abstract**

Calculators and microcomputers have a practical and educational application for exceptional children. They can facilitate and enhance learning by being a "least restrictive" learning device. The microcomputer, a glorified calculator, has the advantage of being programmed, information storage and retrieval, a large visual display and the availability of educational (software) programs for all grade and age level students. The microcomputer measures students' performance, adjusts to individual learning needs of students, promotes logical thinking, broadens technological experiences, develops reading and map skills, explores math concepts and reinforces basic academic learning. The article explores the multifaceted uses of microcomputers, available software, and how to select comparative microcomputers for the classroom.

To what extent can calculators and microcomputers be successfully used with exceptional children? This inquiry was the basis of a Chicago State University workshop by the National Science Foundation. Participants included administrators, teachers, librarians, and consultants working with exceptional children. The workshop included lectures, demonstrations, hand-on experiences, and discussions.

The technology in schools moved from the introduction of teaching machines, programmed materials and educational television in the 1960's to hand-held calculators in the 1970's and minicomputers in the 1980's. The low cost and availability of calculators have increasingly made them an accessible instructional tool for all students. The calculator can be an innovative teaching tool to enhance understanding and achievement in mathematics.

The calculator has two applicable functions in the classroom, a practical function and a pedagogical function. With a practical function, the calculator is considered as a device much like an eraser and chalk and paper and pencil - a tool that can do the work involved in tedious arithmetic computation. The calculator saves time and reduces the anxiety of the student. The pedagogical function of the calculator is

much like a textbook, flashcards, or a manipulative device; it facilitates learning and enhances understanding and competence.

For the exceptional or handicapped student, the calculator can be the "least restrictive" learning device. The practical function of the calculator involves obtaining a usable answer with the least effort in the minimal time. Since the calculator is fast and effortless, techniques of trial and error and the reinforcement of the correct answers can easily be found.

The extent of applicability of calculators with handicapped children will vary from individual to individual. Many handicapped students function well with one digit numbers using paper and pencil calculations. When it comes to multiple digit numbers, paper and pencil calculations may be beyond their capabilities. But the calculator provides a practical bridge between success and failure. It permits the student to progress to a higher level of competence. Many handicapped students lack good memory retention. In the past, multiplication and addition tables and charts were the only personal reference for students attempting to recall the basic arithmetic facts. The calculator not only provides the basic facts, but allows the student to learn the facts that are beyond the traditional tables.

In instances where students have had bad experiences with mathematics or fear mathematical problems that entail extensive computation, the calculator allows students to concentrate on the solution to the problem. The calculator also permits them to verify and re-verify their answer as well as finding different methods of solving the problem by trail and error. The student using the printing calculator has a printed record of the process and solution. He could also check for digit reversals and compare processes and answers. Since most calculators do not have printers, and problems and processes must be retained in the student's mind, the Sharp 5100 or 5010 with the LCD rolling writer display is a solution. The rolling writer displays numbers, letters and symbols of up to 80 characters including direct formula entry with up to 15 levels or parentheses and 11 data memories (six for the 5101).

For the beginning, young, or exceptional student, the game-practice devices such as "Dataman" and "Little Professor" are highly motivational for reinforcement and drill. Perhaps the most important aspect of mathematics for the slow, handicapped or potential dropout student is learning basic arithmetic skills and their applications, such as the ability to make change and to use a cash register. The Cosis No. C11 Er Mini Electronic Cash Register has a quick print 11-digit system and 7-digit Digition display with automatic change calculation and simple repeat registering. It is relatively inexpensive at \$99.95 and easy to use.

Students' confidence and motivation can be enhanced by the

teacher's use of the "EduCale", a two display unit. It has the usual small, red numerical readout facing the teacher as he operates it and a big display unit showing the same numerical display on the side facing the students. (The "EduCale" is distributed by Educational Calculation Devices, Inc., Laguna Beach, California). The Overhead Demonstration Calculator can also be seen by a classroom of students or a large audience (distributed by Stokes Publ. Co., Palo Alto, California).

The Sharp 827 "Play a Tune" calculator has 11 music notes and plays a tune while math problems are solved. The additional aural clue would be helpful for the slow, partially-sighted student or the student with an aural-memory. The APH Student Plus Talking Calculator, which has 24 words of vocabulary, keys from 1-10, four operations, equals, root, memory, etc. and six arithmetical functions, with keys with highly visual notations, is for low vision students. (Distributed by American Printing House for the Blind, Louisville, Kentucky; price \$395.99). Panasonic also has a Talking Calculator (No. Pan 1650) with audible and visual playback for the sight-impaired.

It appears the calculator will come to play a more prominent role in the classroom with regular and exceptional students. Recent research shows that mentally handicapped students who can be educated in the main, do not acquire arithmetic skills much beyond the fourth grade level. The calculator can help the student exceed this level of achievement. However, special consideration needs to be given to adapting the device to the various special needs of handicapped students. The special adaptations should include large keys, large digital displays, and optimal, auditory responses for keying and printing. For the sight-impaired, braille keys and braille printer tapes should be incorporated in the calculators.

A more recent instructional device that is being used increasingly in the schools is the microcomputer. It may replace the calculator in that the microcomputer performs all the functions of the calculator in addition to being easily programmed to store and retrieve specific requested data, ask questions, and evaluate and report students' responses. A computer is actually a glorified calculator. Both do mathematical calculations. A calculator is usually capable of performing only one step at a time and does them at a very slow rate. Also, it cannot store more than a couple of results at a time. A computer can take a large amount of information and perform a series of steps; a program often contains thousands of lines of instructions. It can also store large amounts of information. Unlike the computers of a decade ago which filled several rooms and cost millions of dollars, the microcomputer today, such as the TRS-80 or Apple, has a lightweight typewriter keyboard and small television monitor, costing in many cases less than \$1,000. The size of the keyboard and the display screen

are compatible for use in schools. Displays are in black and white or color, depending on the model.

Unlike the larger computers, one does not need a strong knowledge of programming. Because of the large number of pre-packaged programs or software now available, it is not necessary to know much about programming. In most cases you simply load the program and proceed with the lesson or game.

On the other hand, microcomputers do not think. One must tell them what to do. This is called programming. Nor do microcomputers understand English. Computers must be told what to do -- step by step. Everything they do must be reduced to the 1's and 0's of the binary language. What a computer does understand and "speak" (respond) -- fluently -- is a "programmed language." Microcomputers have a program language called BASIC programming, which is easy to learn. Teachers and students can easily write their own programs. One can write a simple game, an arithmetic lesson, a class schedule, an IEP for special education student or a business program.

Computer Assisted Instruction (CAI) is an integral part of microcomputer "instruction". Computer-aided instruction is the process by which written and visual information is presented by a computer in a logical sequence to a student. The computer serves as an audio/visual device. The student learns by reading the text material presented or by observing the graphic information displayed. The primary advantage of the computer over other audio/visual devices is the automatic interaction and feedback that the computer can provide. Multiple paths through the course material can be taken, depending upon the individual student's progress. Courseware in multi-subject areas such as reading, mathematics, language arts, social studies and science is becoming available for all grade levels. The courseware ranges from courses that teach kindergarten students to count to advanced courses in physics and statistics. Microcomputers have many of the same educational advantage as calculators. Instruction can be highly individualized. Micros can be diagnostic tools for evaluating students. They are non-threatening to the student and can be programmed to correct and give praise, e.g., "Very Good, John," or "Keep up the Good Work". The microcomputer is used as a supplementary approach to learning, drill and reinforcement. It extends the teacher's time to provide additional instruction and individualized help to other students. Its main value is as an effective technique for individual rather than group instruction. Students can learn at their own pace and convenience.

Specific applications of and learning using the microcomputer can best be illustrated via a discussion of the available educational programs or software. There is EDU-PAK from EDU-Ware at \$39.95, which

contains five programs -- "Compu-Read", and "Perception". We shall discuss a few of these programs.

"Compu-Read", designed to improve a reader's speed and retention, begins with a choice of six different programs. "Compu-Read I" places three random letters on the screen for a brief moment. The user must type these letters after they have vanished. If he succeeds, the next set of letters remains on the screen for a shorter period of time. If he is wrong, the time of display increases. At the end, the time of display is shown, as well as the number of letters per second for both the start and end of the segment. This information helps the user gauge his progress.

"Compu-Read II" uses words instead of random letters. At this stage, the skills developed in the first program are called into service. Skills related to recognition are also emphasized and strengthened in this exercise. "Compu-Read III" displays a word on the left and four words on the right. One of the four is either a synonym or antonym for the word on the left. Once again, the words do not remain on the screen for long. The user must type the correct synonym or antonym. This involves both recognition of the words and comprehension of their relationships. This system can train a person to absorb and analyze data in a rapid manner.

"Compu-Read IV" presents a sentence, then asks the reader a question concerning the sentence. The question is always about either the subject or object, thus training the user to scan quickly for information. This technique can greatly increase reading speed. Another reading program is "Missing Facts" (\$29.95) which can be used by a student with no help from a teacher.

In "Math Table Drill" (see above), problems are presented with one missing factor --  $5 \times ? = 9$ , and the user has to supply this missing number. After a correct answer, the whole problem is displayed again. When the guess is incorrect, three chances are given before the computer provides the answer.

Flash Spelling (\$14.95) presents words one letter at a time in large script. The whole word remains on the screen for an instant, then vanishes. At this point, the user must correctly spell the word. The benefit of this program is that it reinforces learning. By seeing the word one letter at a time, the student is more likely to remember the correct spelling.

Scrambled Letters (\$14.95) is for two players, who take turns trying to solve jumbled words. If a player is correct, his opponent gets a new word; on an incorrect guess, the other player gets a shot at the same word. If they both miss twice, the program shows them the word. Extra points are given for speed in this contest.

Introduction to Mathematics on the Computer (\$29.95) presents the



student with math problems at a specific selected level of difficulty. If the student does well, the level increases. The value of the program becomes apparent when the student makes a mistake. After several tries, if the answer hasn't been found, the machine restates the questions as a word problem. Instead of using "5+3," for example, it says, "Maybe this way would be easier for you: If I had 3 pencils and you gave me 5 more, how many pencils would I have?"

Another interesting program is States and Capitols (\$14.95). A high-resolution map of the USA is displayed. One at a time, the states are outlined. The player has to guess the state. If he is wrong, the program will tell him the answer. After that, he has to guess the capitol. Again, the correct information is provided after each guess. The game is nicely designed but would be best used in a classroom since individuals who use it would quickly learn the states and have no more need of the program.

A nicely packaged program is "Music Composing Aid," (\$11.95), which allows the entry of notes, the replay of the notes or of other saved scores, and the editing of compositions. The music, coming from its own speaker, sounds like an alto recorder. When using the system for composition, each note is played as it is entered. Notes are coded using a simple method. A below middle C is entered as C. To go an octave higher, the composer would use CC. There is a range C below middle C to C three octaves above middle C. Along with the program is a data tape containing a Bach composition. The program encourages students to learn musical notation so they can transpose their favorite scores from sheet music into computer data. This package offers a nice variety of programs and would be worth the price for the music routines alone. This is only a sample of the educational programs available, there is a lot of educational software available. The quality is getting better and the prices should come down.

The following criteria should be used in the evaluation of instructional software packages: \*Human engineering aspects: e.g., attractiveness of display, ease of operation. \*Adequacy of task analysis: are all the subskills identified? \*Completeness of subject-matter coverage. \*Adequacy of basis for instructional decisions.

Software presently available includes a teacher-aide program for determining class grade distribution, an IEP program for special education students, class listing, equipment and book inventories, cumulative achievement score reporting, and health and psychological data records for individual students and the class. The microcomputer can store and make printed copies of all information. These data are stored on cassettes or diskettes. The data can also be edited and revised without retyping the original information.

One of the most important questions is what types of

microcomputers are available and which one should one purchase. First, spell out exactly what you expect from your own microcomputer -- today and years to come. Visit computer stores, read journal articles talk to educators who use them in their schools, and get advise from those who distribute and sell microcomputers. Learn to operate one yourself. In short, become as familiar as possible with the various instruments.

In terms of determining which of a dozen computers to purchase follow the foregoing advice. Following is a comparative list of some of the most popular microcomputers:

|                                   | Apple II Plus                                                                                               | TRS-80 Level II                                                                                        | Heath WH80                                                                                                               | Atari 800                                                                                                                        | Commodore PET/CRM                                                                                  |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Description of System             | Keyboard and CPU in a plastic case with metal bottom                                                        | Keyboard and CPU in single black plastic unit, cassette and monitor in separate units.                 | Keyboard, CPU, monitor and disk in metal case.                                                                           | Keyboard and CPU in plastic case with metal shielding, cassette in separate unit.                                                | Keyboard, CPU and monitor in a single metal unit.                                                  |
| Memory *                          | 16-48K RAM 8K Basic, 4K monitor, 4K hardware switches)                                                      | 4-48K RAM 16K ROM                                                                                      | 16-48K RAM 8K ROM                                                                                                        | 16-48K RAM up to 28K ROM                                                                                                         | 8-28K RAM 16K ROM                                                                                  |
| Computer Other available language | Integer Basic, Pascal, Pilot                                                                                | Fortran, Basic                                                                                         | Pascal                                                                                                                   | Pascal (1981) Microsoft Basic (1981)                                                                                             | None                                                                                               |
| Graphics and color                | 40 x 40 with 16 colors, 200 x 192 with 8 colors                                                             | 8 W 48 x 128 using graph-- characters with 4 x 2 blocks, giving programmable control of 16 x 64        | 33 graphics characters available, each composed of an 8 x 10 matrix 8 W                                                  | Several Modes, from 40 x 24 with 4 colors to 192 x 320 with 2 colors                                                             | 8 W special graphics symbols 26 x 40 display                                                       |
| Text                              | 24 x 40 upper case                                                                                          | 16 x 64 upper case                                                                                     | 24 x 80 upper and lower case                                                                                             | 24 x 32 upper and lower case                                                                                                     | 26 x 40 upper and lower case                                                                       |
| Sound Capabilities                | Built in speaker                                                                                            | Through peripherals                                                                                    | Through external devices                                                                                                 | 4 voices plus speaker                                                                                                            | Through external devices                                                                           |
| Outside Software availability     | Excellent                                                                                                   | Excellent                                                                                              | Little                                                                                                                   | Fair, getting better                                                                                                             | Good                                                                                               |
| Outside Hardware availability     | Excellent, including boards for speech and music, light pen, printers, bit pads, and joysticks              | Excellent, including music, speech, light pens, and printers                                           | Little                                                                                                                   | Little                                                                                                                           | Good, including music boards, S-100 expansion interface, and joysticks                             |
| Dependability                     | Good                                                                                                        | Fair                                                                                                   | Good                                                                                                                     | Good                                                                                                                             | Good                                                                                               |
| Service                           | Available at all authorized dealers. Quality varies                                                         | From 86 service centers across the country                                                             | Through Heath Service Centers                                                                                            | From many dealers or Control Data Centers                                                                                        | Available at some dealers or mail in                                                               |
| Price of Basic System             | \$1195 for 16K                                                                                              | \$549 for 4K<br>\$708 for 16K                                                                          | \$1195 for 16K<br>Kit without Disk                                                                                       | \$1080 for 16K                                                                                                                   | \$695 for 16K                                                                                      |
| Price of System with Disk ***     | \$1380 for 32K with Disk                                                                                    | \$1580                                                                                                 | \$2065 for 8K with Disk, Assembled                                                                                       | \$2000 for 32K with Disk                                                                                                         | \$2380 for 32K with dual Disks                                                                     |
| Comments                          | An established machine with continuing support from Apple and other manufacturers. Many active users groups | A very popular computer with many users groups. Available software and hardware will continue to grow. | Heath has an excellent reputation in the electronics field. The use of RAM for language allows many future applications. | The Atari is growing in popularity. Many vendors will probably be adding Atari products to their lines of software and hardware. | A nice unit with some good features, especially popular with educators since it is self-contained. |

\* The amount of information that can be stored. (64K stores more information than 16K.

\*\* A disk ( floppy); similar to a phonograph record that stores information and programs.

\*\*\* Prices and models may vary.

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Below is a picture of a TRS-80 with various components. The Disk Drive, similar to record player, records, stores and playback information through the computer. The Printer is an instrument, similar to an automatic typewriter, that produces a printed copy of the information in the microcomputer.



An innovative device developed for the microcomputer is the speech synthesizer. It can be programmed to respond orally to the student's typed question, statements or responses. It could be helpful to the nonverbal or visually impaired student. A more recent innovation in microcomputers is the "Talk Box" in which the microcomputers are programmed to be sensitive to the nuances of a particular voice.

As an instructional aide for exceptional students the microcomputer appears to have great adaptability. It can measure the student's performance and adjust the difficulty of the problems in a non-threatening manner. As the student successfully completes a skill or a concept the microcomputer can generate more difficult problems, as illustrated in the sample programs. It can also provide easier problems when the student indicates, by his responses, that he is having difficulty.

Calculators and microcomputers are here to stay. With the reduction in school budgets and the given need to provide individualized instruction (IEP's) and to mainstream exceptional students, the inclusion of these devices as instructional tools seems inevitable. The calculator and the microcomputer are the first instructional devices available to all students.

In summary, both of these instructional devices can benefit students

by:

- Reinforcing the basic skills
- Helping in the basic skills of reasoning
- Reinforcing problem solving ability
- Promoting logical thinking
- Encouraging creativity
- Developing concentration and independent learning
- Broadening technological experiences
- Providing stimulation and motivation
- Developing map reading skills
- Helping to develop number sequencing concepts
- Aiding in discovering mathematical concepts
- Developing music skills.

All of this has important implications for teacher education. Changes in methods of teaching will take place. It is essential that those who will teach future citizens be prepared to introduce them to the tools which they will use and which will affect their lives in so many ways. Teachers must be trained to use calculators and microcomputers in educational settings.

#### **CALCULATRICES ET MICRO-ORDINATEURS POUR ENFANTS SURDOUES**

Les calculatrices et les micro-ordinateurs ont une application pratique et éducationnelle pour les enfants surdoyés. Ils peuvent faciliter et augmenter l'assimilation en étant considérés comme une méthode "moins restrictive." Le micro-ordinateur, calculatrice améliorée, a l'avantage d'être programmé, de stocker et produire l'information, d'avoir un large écran de visualisation, et d'offrir des programmes éducationnels (logiciel) à des élèves de tout niveau et de tout âge. Le micro-ordinateur mesure les résultats accomplis par les élèves, s'adapte à leurs besoins individuels, encourage le raisonnement logique, élargit les expériences technologiques, développe les compétences de lecture, explore les concepts mathématiques, et enfin renforce les connaissances académiques de base. Cet article explore les facettes multiples de l'utilisation des micro-ordinateurs, du logiciel disponible, et aide à choisir des micro-ordinateurs pour les classes.

Rechenmaschinen und Mikrocomputer für Ausnahmeschüler  
Rechenmaschinen und Mikrocomputer können in einen zweckmäßigen und pädagogischen Verwendung für Ausnahmeschüler benutzt werden. Sie können das Lernen erleichtern und erhöhen indem sie eine „am wenigsten einschränkende“ Lernvorrichtung sind. Der Mikrocomputer, eine verherrlichte Rechenmaschine, hat den Vorteil, daß er programmiert werden kann, daß Information aufgespeichert und zurück-erhalten werden kann, daß eine große visuelle Darstellung geboten wird, und daß erleichternde Programme (software) für alle Schulklassen und Lebensalter der Schüler zu bekommen sind. Der Mikrocomputer erwägt die Leistung der Schüler, paßt das Programm den Lernbedürfnissen der Schüler zu, fördert logisches Denken, verbreitet technologische Erfahrungen, entfaltet Lesefähigkeit und Kartenlesefähigkeiten,

erforscht mathematische Begriffe, und verstärkt allgemeines akademisches Lernen. Diese wissenschaftliche Arbeit untersucht die zahlreichen Verwendungsmöglichkeiten der Mikrocomputer, ihre verfügbaren Programme, und wie eine verhältnismäßige Wahl unter den dargebotenen Mikrocomputer für den Unterricht getroffen wird.

#### LAS CALCULADORAS Y MICROCOMPUTADORAS PARA LOS NIÑOS EXCEPCIONALES

Las calculadoras y las microcomputadoras tienen una aplicación práctica y educativa para los niños excepcionales. Pueden facilitar y mejorar el aprendizaje por ser "menos restringidas". La microcomputadora es una calculadora glorificada que tiene la ventaja de poder ser programada, tiene capacidad de guardar y encontrar información, y tiene una pantalla grande y muchos programas (software) educativos para todas las edades y niveles escolares. La microcomputadora mide el avance de los estudiantes y promueve el pensamiento lógico, amplía la experiencia tecnológica, desarrolla la lectura y el uso de los mapas, explora conceptos matemáticos y refuerza el aprendizaje académico básico. El artículo explora los usos multifacéticos de las microcomputadoras, los programas (software) en el mercado, y como comparar y seleccionar microcomputadoras para el salón de clase.

## **The Friday Morning Group: A positive Process**

by

Leonard Bruce Phillips

### **Abstract**

This article describes a group process developed for young emergency shelter residents who had run away from home, been pushed out of their homes or somehow been caught up in the social service/juvenile justice system. The process described involves the following components: (1) identification of negative life situations, (2) structuring of positive statements for self-affirmation, (3) progressive physical exercise, (4) relaxation, (5) Baroque music, (6) mental imagery, and (7) group discussion and evaluation.

The author presents the thesis that group participants with the process described generate positive structuring of personal and social issues, leading to positive change in the individual. Those who perceive value in the type of process described here are challenged to move forward in designing and applying more rigorous scientific evaluation than the clinical efforts described.

Historically, the development of group therapy has arisen due to the failure of psychoanalysis to include important social influences and the required time and expense involved in individual therapy. As a result, the group has been recognized as a psychodynamic process in its own right. Supported by literature, it is now commonly recognized and taught that the group has important social, educational and therapeutic characteristics. Participants generally expect a positive, productive, healthy growth orientation within the group. Other common expectations of group participants are an opportunity to learn about themselves and others, to experience the give and take of caring emotions, and to participate in a psychosocial climate which enhances freedom of expression and communication feedback.

Emphasis in the nonpsychoanalytic group is usually on the here-and-now. Present time, or immediate, emotional images are the concern with an individual and group learning process evolving through the comprehensions by the group as a social entity. Group techniques vary widely, though the aims are generally the same, i.e., enlightenment, interaction, learning, and change.

This paper presents a descriptive report of a group process which was developed as an extension of the traditional group methodology for youth shelter residents who had run away from home, been excluded from a healthful home life, or in some manner had been caught up in the social service or juvenile justice system. The process was designed to



include the following components:

- (1) Identification of negative life situations,
- (2) Group structuring of positive self-affirmation statements,
- (3) Progressive physical exercise,
- (4) Relaxation,
- (5) Baroque music,
- (6) Mental imagery,
- (7) Group discussion and evaluation.

A short term evaluation of the process indicates the group participants can gain general positive structuring of many personal and social issues which can lead to a positive change in the individual.

The setting was a privately funded emergency shelter for youth ranging in age from thirteen to nineteen years. Residency time was usually less than forty-five days. The author and his colleague, clinical social work interns, were assigned the responsibility of leading the adolescent group each Friday morning. The group size varied weekly from three to twelve participants. Members who had been residents of the shelter for longer periods were frequently absent from the Friday Morning Group while numerous newer residents were brought into the group. Due to the limited time period of residency and other uncontrolled variables, it was not unusual for the group composition to vary greatly from Friday to Friday.

Normally, a structured exercise was prepared for the Friday Morning group. Usually, the group work started with introductions, recognition of new members, and a brief warm-up exercise. This was followed by a discussion period to provide participants the opportunity to talk about anything they might want to discuss in a group setting. On occasion, the group would be so aroused concerning some particular incident or situation that the structured activities were bypassed and the entire session spent processing the immediate concerns of the group.

As the author and his associate's experience grew during the internship, analysis of the group's overall results showed less than optimum performance in the areas of individual personal growth, short-term individual problem solving ability and social adjustment. It soon became evident that the fluid structure of the group, in addition to short involvement time, did not present the ideal environment for the more traditional group approach. The author and his associate immediately set upon a search of methods which could be used to augment the traditional approach to render not only better but more immediate results.

After much reading, research and some experimentation with the group, the author and associate finally came upon the process called "Suggestopedia," which was developed by Lozanov (1975) and

colleagues over the past decade in Bulgaria. Suggestopedia was reported and popularized by Ostrander and Schroeder (1979) as an accelerated stress-free learning process. It is reported in their book called *Super-Learning* that the method permits learning language in just a few weeks, volumes of technical material immediately, and even manual skills in a very short period. The author and his associate reasoned that, since personal self-worth imaging, social adjustment skills, and problem solving capacity are in fact based upon a learning process, the Lozanov method of Suggestopedia, or Super-Learning, was worth a try.

Structurally, the methodology consisted of the following key elements: (1) goal definition, (2) muscle contraction/relaxation exercise, (3) relaxation (4) visualization of the goal in a state of musically induced meditation, and (5) the use of an affirmation during and after the process period. To the average western psychologist some of the above elements may seem strange and even non-traditional, which in fact they are if viewed from our traditional western train of psychodynamic thought. Yet, it is interesting to note that the key elements are evident in such ancient concepts as Yoga, Confucianism and many other traditions only recently brought to the attention of the West. Further, etiologically there are a number of surprising connections to the early prestructuralized work of Freud.

The introduction of the experiment to the group was surprising. Young minds reach out readily for the different, the unknown, the exciting! When the author announced that he had something new to offer, everyone became eager! After all, new games are always fun!

In the initiation phase, there were the usual few minutes of introduction, the warm-up and then a casual discussion involving each resident in identifying difficulties in daily living. This is a negative sub-element approach of goal setting, which we have arbitrarily called taking a "situation inventory". As group participants verbalized a special area of stress or concern, this was written beside their name on a flip chart in front of the group. Some of the negative situations of stress and concern are shown in illustration No. 1.

| Name  | Situation           | Positive Affirmation Statement |
|-------|---------------------|--------------------------------|
| John  | Poor concentration  |                                |
| Betty | Poor memory         |                                |
| Rick  | Low energy, fatigue |                                |
| Art   | Anger               |                                |
| Ruth  | Poor self-image     |                                |
| Hal   | Irresponsible       |                                |
| Judy  | Impatient           |                                |

|       |                                 |
|-------|---------------------------------|
| Allen | Skipping school                 |
| Jan   | Avoids reading                  |
| Alice | Difficulty telling<br>the truth |

Each participant, as can be seen, identified a different personal situation to deal with a different aspect of self-change, improvement or control. The next step was to extract a personalized positive statement for the individual to use in taking conscious control of the suggestions that shape personal performance (Hollis, 1964). We suggest conceptually, that one can in this way shift focus and energy away from negative and perhaps even self-destructive patterns that have accumulated in an unknowing manner for a period of years. In determining positive statements or affirmations, the group worked as a team to help and edit each statement to the basics. (See Illustration No. 2.)

| Name  | Situation                       | Positive Affirmation Statement                 |
|-------|---------------------------------|------------------------------------------------|
| John  | Poor concentration              | My concentration is complete and focused.      |
| Betty | Poor memory                     | My memory is sound and complete.               |
| Rick  | Low energy, fatigue             | I am energetic and alert.                      |
| Art   | Anger                           | Anger and tension dissolve, I am good humored. |
| Ruth  | Poor self-image                 | I am likeable and loveable.                    |
| Hal   | Irresponsible                   | I am responsible.                              |
| Judy  | Impatient                       | I am relaxed and patient.                      |
| Allen | Skipping school                 | I enjoy school.                                |
| Jan   | Avoids reading                  | I enjoy reading.                               |
| Alice | Difficulty telling<br>the truth | I am truthful.                                 |

Development of positive statements was approached in a manner similar to brain-storming but with tighter time control. The group went down the list providing assistance as needed in developing a positive affirmation statement for John, then Betty until a positive statement had been formulated for each person and situation listed. The process was limited by time and brevity (three words or fewer if possible), and by appropriateness to the particular situation. The task involved all members of the group and evoked a high level of interest, enthusiasm and energy.

It was found that the free, yet structured, nature of the group in their collective effort to develop a positive statement specific to each group member elicits a caring communication between participants. The main flow of dialogue is in the form of a positive problem - solving experience reflecting philosophy, innovation, and creativity. This process combines individual and group therapy aims for the situation of concern for each group member as solutions emerge out of each individual in the collective setting. An experiential network of complex interactions form in response to each member's personal and social situation level. Thus, the group manifests in itself emotional and mental participation in and care for the experience of each individual. The participants become protective and reactive to any overt negative behavior through empathic experience (Blanchard, 1958).

Alternately, the person with whose situation the group empathizes shows a hope that the group will provide supportive help. Alternative positive solutions are offered. The person sees and feels that each member participates in his experience or situation in a genuine way rather than in a superficial, negative, critical or confronting manner. These responses can provide new information and solutions to the person unable to see them before. The expectation and fulfillment of relationships within this problem-solving context results in relaxation and fellowship with others.

Once the Situation Inventory with matching group-augmented affirmation was completed, a structured distractor activity was introduced in the form of a series of physical exercises. These involved the progressive contraction and relaxation of different muscle systems in the body beginning with the feet for three repetitions, then the lower legs, the upper legs until most of the major voluntary muscle systems of the body had been progressively stressed. This period of controlled progressive muscular stress and relaxation not only served as a distractor but also produced a moderate level of fatigue.

At this point, the author must challenge the reader with a question: What role does exercise and/or resultant fatigue play in the psychodynamic process? Lozanov stresses its importance to his method. Other findings indicate an increased level of learning ability following mildly stressful exercise. Some writers believe this to be the result of increased oxygen to the brain while others propose that enhanced learning ability is the result of enzyme changes in the bio-chemical system. Others, principally those who choose to walk around the complex chemistry of the human organism, indicate that exercise serves primarily a purpose of mental distraction in diverting the brain from a random fly-wheeling, thus allowing a centering to permit greater focal concentration. In any case, psychodynamically, the integrated truism of "mind, body, psyche" put forth by holistic proponents may well prove

to be the major understanding of human psychology in the last half of this century.

Following the exercise period, the group process now moved to a guided imagery relaxation exercise. The first time the group was led through this exercise a professional tape was used. Dissatisfaction with the quality of tape resulted in subsequent sessions with the author leading the group through the exercise verbally. Somehow, this seemed more real and effective with the group members in enhancing their level of relaxation, probably because the leader was now able to pace the exercise intuitively to the groups' relaxation progress. The group members were now in a special state of consciousness . . . relaxed, but not asleep (Roberts, 1980).

The group was now ready for the final stage of the process. The leader briefly reminded each member of their positive affirmation statement by direct individual instruction. He then instructed the group to visualize the statement and to repeat it over and over in rhythm with soft background music from a cassette player. Further, it was suggested to the participants that they visualize the words of their statement in color and vary their mental image not only in color but in size and intensity in rhythm to the music. The music was played softly in the background for fifteen minutes.

It appears that the type of music is extremely important to the process. According to Lozanov, music producing a beat of once per second, sixty beats a minute, is optimum. Baroque music has this cadence and was used in the author's experiment. In this respect, the reader is offered a simple experiment or invited to draw on previous experience. Listen to hard rock music for a few minutes and check your pulse and mental sensations. You will find them increased. Next listen to lively gospel music, or better yet, attend a Pentacostal revival! You'll probably sense a different mental level, even a different pulse rate. Now try Baroque music with a smooth even flowing, restful cadence. The sympathetic mental and physical effect between rock, or gospel, and Baroque is the difference between a stimulant and a tranquilizer.

At the end of the fifteen minute music period, the music was turned off and the group was instructed to stand up and stretch in place. Following a couple of minutes of stretching, a brief discussion was conducted with the participants. Each person was asked to describe what he felt and visualized mentally. In every case, the participants reported feeling very relaxed and peaceful. Mental visualization of the affirmation, as would be expected, varied with each individual. Some reported seeing the affirmation in text form, others as symbols or varying color patterns and, in some cases, as images of themselves in a physical placement representing the affirmation. Universally, positive response was provided for this type of group when the participants

were asked if they would prefer a general discussion group, structured exercises, or the type of group process just completed.

Observations by the clinical interns on Fridays following this type of group process revealed immediate positive indications as to its worth. There was evidence of a startling drop in anti-social activities by group members during the preceding week. For instance, the home supervisor indicated a more subdued atmosphere among participants when engaged in play, a greater concern and understanding of property, a drop to zero of personal and inter-personal conflicts requiring staff intervention. More important was the obvious overall individual's self-worth visualization as evidenced by increased self-confidence, a calmer approach to problem solving and increased dedication to self-improvement.

It is true that the results mentioned above were observed in a short-term manner in which conventional control and measurements were not applicable. Therefore, claims of objectivity in attempting a valid clinical evaluation would be on a poor foundation. Nevertheless, it appears the process holds great promise over those traditional group modules that cannot apply to the reality of short-term, highly flexible groups. It is the purpose, therefore, of this article to challenge those who perceive the value of the type of group process described to move forward in designing and applying scientific evaluation more rigorous than the clinical efforts described.

And, as a final note, a final challenge: does the method described potentially give the participant a social learning process with which to grow outside the group?

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## LE GROUPE DU VENDREDI MATIN: UN PROCÉDÉ POSITIF

Cet article décrit un traitement de groupe pour jeunes sans abri s'étant enfuis de chez eux ou venant d'un centre correctionnel. Ce traitement comporte les composants suivants:

1. identification de situations négatives
2. structuration de déclarations positives pour affirmation personnelle
3. exercice physique progressif
4. relaxation
5. musique baroque
6. images mentales
7. discussions de groupe et évaluation.

L'auteur soutient la thèse que les participants du groupe soumis au procédé décrit produisent une structuration positive des questions personnelles et sociales, conduisant à un changement positif de l'individu. Ceux qui voient que le genre de procédé décrit a de la valeur sont encouragés à continuer les recherches pour concevoir et appliquer une évaluation plus rigoureuse que les efforts cliniques décrits.

Die Freitagsmorgengruppe: Ein positiver Prozeß  
Diese Abhandlung beschreibt einen Prozeß innerhalb einer Gruppe, der für junge Notunterkunftsinassen entwickelt wurde, die von Zuhause weggelaufen sind, von ihrer Familie ausgetrieben wurden, oder anderweitig in das Fürsorgesystem oder die Jugendjustiz verwickelt wurden. Der Prozeß, der hier beschrieben wird, enthält die folgenden Bestandteile: 1) Identifikation negativer Lebensverhältnisse; 2) Die Formung von positiven Behauptungen zur Selbstbestätigung; 3) Progressive Leibesübungen; 4) Entspannung; 5) Barockmusik; 6) Geistesvorstellungen; und 7) Gruppendiskussion und Bewertung. Der Autor behauptet, daß Gruppenmitglieder durch den eben beschriebenen Prozeß ein positives Konstruieren ihrer persönlichen und sozialen Probleme bewirken, welches zur positiven Änderung des Individuums führt. Diejenigen Leser, die einen Wert in der Form der hier beschriebenen Arbeitsweise erkennen, sind herausgefordert, rigorosere wissenschaftliche Bewertungen anzuwenden, als der klinische Prozeß, der hier beschrieben wird.

## EL GRUPO DEL VIERNES EN LA MAÑANA

Este artículo describe un proceso de grupo desarrollado para jóvenes que están alojados temporalmente en residencias de emergencia, jóvenes que han huido de sus casas o jóvenes que han sido corridos. El proceso que se describe tiene los siguientes componentes: 1) identificar las situaciones negativas de la vida. 2) Estructurar frases positivas. 3) Ejercicio físico continuo. 4) Relajación. 5) Música barroca. 6) Imágenes mentales. 7) Discusión y evaluación de grupo.

El autor presenta la tesis que los miembros del grupo que participaron en el proceso descrito generan una estructuración positiva de problemas personales y sociales que los lleva a cambios positivos. Los que dan valor al proceso descrito aquí aceptan el reto de avanzar en el diseño y aplicación rigurosa y científica del proceso en vez de sólo aplicar los esfuerzos clínicos descritos.

## **A Report On The Use Of Suggestive-Accelerative Learning Techniques In Vocabulary Tutoring For The Scholastic Aptitude Test (SAT)**

by  
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Georgia Department of Education

### **Abstract**

Suggestive-accelerative learning techniques, including relaxation and visualization, were used to tutor a high school junior on vocabulary in preparation for taking the Scholastic Aptitude Test (SAT). A total of 245 non-ordinary words were presented over six sessions. On tests of 104 randomly selected words and definitions, the student posted an overall score of 81% accuracy. Other topics addressed during the sessions were reduction of negative feelings related to taking the SAT and creation of a positive attitude of success in taking the test.

### **Introduction**

It is the purpose of this report to describe the use of suggestive-accelerative learning techniques in a one-to-one tutorial situation. Methods used were adapted from those described in Prichard and Taylor (1980) and Ostrander and Schroeder (1975). Other suggestions were obtained through personal telephone conversations with Prichard. Although not considered by the author to be a strict research study (no pre/post measures were taken, no experimental/control groups were compared, no attempt was made to control sources of variation), the methods used and the results obtained in this study will be of interest to other persons wanting to apply suggestive-accelerative learning techniques to tutoring situations.

### **Method**

#### *Purpose*

The purposes of the tutorial sessions were to assist a high school student in:

- a. learning word definitions as preparation for taking the Scholastic Aptitude Test (SAT),
- b. reducing anxiety related to the testing situation, and
- c. providing positive suggestions related to success on the SAT.

### *Subject*

The student in these tutorial sessions was a 17 year old male high school junior. No intelligence test data or other personal information was collected by the writer.

### **Procedure**

Eight tutorial sessions were held with the student, one session per week. Sessions were held in the evening at the writer's home and were between thirty and forty-five minutes in length. They were held in the writer's basement study in order to avoid distraction. Words and definitions used in the sessions were selected from a commercially prepared SAT study guide.

A description of each session follows. Session activities are reported in terms of active and passive phases as described in Ostrander and Schroeder (1979, p. 312).

#### *Session 1*

After an introduction to the techniques to be used in the sessions, the remainder of the first session was used for training in relaxation and visualization. Relaxation was achieved by systematically tensing and relaxing parts of the body as described by Ostrander and Schroeder (1979, pp. 97-99). For practice in visualization, a sequence described by Masters and Houston (1972, p. 8) was used. Following these exercises in relaxation and visualization, the student reported that he had achieved good relaxation, but that he had had difficulty in holding the mental imagery.

#### *Session 2*

A list of 53 words and definitions was used for this session. At the beginning of the session, relaxation was achieved by systematically tensing and relaxing body parts.

##### **1. Active Phase**

Before the session the tutor had written the 53 words to be studied on a chalkboard. The words were written in eight groups with from five to eight words per group. Also prior to the session the tutor had written paragraphs using each group of words in context (eight paragraphs in all). While the student followed the words written on the chalkboard, the tutor read each paragraph using the words in context and then

immediately translated the paragraph using the definitions of the words in the translation.

## II. First Passive Phase (no music)

The mind calming visualization exercise "Chattahoochee River Trip" (Prichard and Taylor, 1980, p. 110) was used to initiate this phase. After the mind calming exercise, the tutor read the list of words and definitions while the student listened with his eyes closed.

## III. Second Passive Phase (with music)

A music tape had been previously prepared that met the requirements for the passive phase of the method being used (Bancroft, 1976; Ostrander and Schroeder, 1979; Prichard and Taylor, 1980). Basically, these requirements are that the music have a distinct, steady rhythm, that it be relatively slow (approximately 60 beats per minute), that it have a duple meter, and that it primarily reflect one mood throughout. Slow movements of concerti by Bach, Telemann and Vivaldi were selected as most nearly fitting these requirements.

While the music tape was being played, the tutor read the words and definitions using inflections as described in Ostrander and Schroeder (1979, p. 118). In this method three types of inflections are used and repeated during presentation of the lesson material. The tutor read the first word and definition using a loud, declamatory inflection; the second word and definition using a soft, soothing inflection; and the third word and definition using normal inflection. This pattern was repeated for the remainder of the word list. While the music was playing and the tutor was reading the words and definitions using inflections, the student was sitting in a relaxed, passive state with eyes closed, listening. The student's breathing was patterned after one method described by Prichard and Taylor (1980) and Ostrander and Schroeder (1979) in which the subject holds his breath while lesson material is being read and breathes during pauses between pieces of lesson material.

## IV. Test

Following the one active and two passive sessions, the student was given a multiple choice test consisting of twenty words and definitions chosen at random from the word list. The test was prepared prior to the session, with items having been selected using a table of random numbers. The student scored 60% on this first test.

### *Session 3*

A list of 48 words and definitions was used for this session. At the beginning of the session, relaxation was achieved by having the student systematically imagine that parts of his body were relaxing.

#### **I. Active Phase**

The tutor read a word using inflections as described in Session 2; the student repeated the word using the same inflection. The tutor read the word's definition, using inflections; the student repeated the definition, using the same inflection. This procedure was followed for each word and definition on the list.

#### **II. First Passive Phase (no music)**

The mind calming and visualization exercise "The Apple Orchard" (Prichard and Taylor, 1980, p. 107) was used to initiate this phase. Following the mind calming exercise, the student was given a copy of the word list being used in the session. While maintaining a relaxed state, he was asked to follow along as the tutor read each word and definition (with music).

#### **III. Second Passive Phase (with music)**

At the beginning of this session, suggestions for maintaining relaxation were given. With the music tape playing and with the student in a relaxed, eyes-closed, non-attentive state, the tutor read each word and meaning with inflections. This was followed by a sentence using the word. The student was asked to visualize the action described in the sentence. The same pattern was followed for each word on the list.

#### **IV. Test**

The student scored 85% on a test of 20 words randomly selected from the lesson material.

### *Session 4*

A word list of 51 words and definitions was used as lesson material for this session. Because it appeared that the relaxation sequence was interfering with the active phase of the session, the relaxation sequence was delayed until the first passive phase.

### I. Active Phase

Conducted as described in Session 3.

### II. First Passive Phase (no music)

After doing a relaxation sequence, this phase was conducted as described in Session 3. (The relaxation sequence replaced the mind calming sequence, which was moved to the second passive phase.)

### III. Second Passive Phase (with music)

After guiding the student in the mind calming and visualization exercise, "Visualizing Colors" (Prichard and Taylor, 1980, p. 106) this phase was conducted as described in Session 3.

### IV. Test

The student posted a score of 80% on a test of 20 words randomly selected from the lesson material.

## *Session 5*

A list of 46 words and definitions was used as material for this lesson.

### I. Active Phase

Conducted as described in Session 3.

### II. First Passive Phase (no music)

Conducted as described in Session 3.

### III. Second Passive Phase (with music)

Conducted as described in Session 3. "Trip Over a High School on a Puffy White Cloud" (Prichard and Taylor, 1980, p. 113) was used for mind calming and visualization.

### IV. Test

At the suggestion of Allyn Prichard, testing was delayed for one



day. The student was given a test in a sealed envelope and asked to take the test the next day. A score of 85% was achieved on a test of 20 words randomly selected from the lesson material.

#### *Session 6*

During this session, work was begun on the other two goals of the tutoring session. These goals were to reduce negative feelings related to taking the SAT and to create a positive attitude of success in taking the test. At the beginning of the session, the student was asked to identify a target score for the SAT and to identify negative feelings he had surrounding taking the test. These were discussed between the tutor and the student.

Because of the additional material being covered in this session, a shortened list of 24 words and definitions was used.

##### **I. Active Phase**

Conducted as described in Session 3.

##### **II. First Passive Phase (no music)**

Conducted as described in Session 3.

##### **III. Second Passive Phase (with music)**

Conducted as described in Session 3. "The American Eagle" (Prichard and Taylor, 1980, p.110) was used for mind calming and visualization.

Following the portion of the second passive phase that was conducted as described in Session 3, new material was added related to the goals described above. Additional relaxation suggestions were given and the student was lead on a guided visualization consisting of the following major elements.

- a. Visualizing negative feelings surrounding taking the SAT.
- b. Visualizing positive feelings challenging and conquering the negative feelings.
- c. Visualizing taking the SAT, including surroundings, positive attitude, answering test items, good feelings, and desired outcome.

##### **IV. Test**

The student posted a 100% score on a delayed test of 12 randomly selected items from the lesson material.

### *Session 7*

A list of 23 words and definitions was used for lesson material in this session. In addition, work was done related to anxiety reduction and positive attitude toward test taking.

#### **I. Active Phase**

Conducted as described in Session 3.

#### **II. First Passive Phase (no music)**

Conducted as described in Session 3.

#### **III. Second Passive Phase (with music)**

Conducted as described in Sessions 3 and 6. "Visualizing Colors" (Prichard and Taylor, 1980, p. 106) was used for mind calming and visualization.

#### **IV. Test**

The student posted a score of 83% on a delayed test of 12 items randomly selected from the lesson material.

### *Session 8*

At the suggestion of the student, lesson material for this session was selected from among lists of Greek root words. A list of 26 roots was selected with a word to illustrate each. This list constituted lesson material for the session.

#### **I. Active Phase**

Conducted as described in Session 3.

#### **II. First Passive Phase (no music)**

Conducted as described in Session 3.

#### **III. Second Passive Phase (with music)**

To begin this phase, "The Escalator" (Prichard and Taylor, 1980, p. 109) was used for mind calming and visualization. With the music tape playing and with the student in a relaxed, non-attentive, eyes-closed

state, the tutor read: root word, root word meaning, word using root word with definition, root word. This sequence was read with inflection. While this material was being read, the student was asked to visualize the word being formed, with the root glowing in a bright color. The student was also asked to visualize any action he associated with the word.

The remainder of this phase was conducted as described in Session 6.

#### IV. Test

No test was given over the material covered in this session.

### Results and Discussion

A total of 245 words and definitions was covered in sessions two through seven. During these six sessions a total of 104 words and definitions was randomly selected for use as test items. Of the 104 test items, the student correctly answered 84 items. This gives an overall score of 81% for the six sessions. It should be remembered that the words used in the sessions were not common words in ordinary usage. For example, lesson material consisted of words such as fecund, lachrymal, uxorious, mendacious, and mellifluous. (Since material covered in Session 8 was not tested and since this type material, e.e., Greek roots, was only used in one session, Session 8 data is not included in this summary.)

Based on a subjective report from the student, the work done on anxiety reduction and positive attitude was helpful to him in taking the test. Although the student did not reach his target composite SAT score of 1200, he did attain a quite respectable composite score of 1000.

The writer believes that suggestive-accelerative learning techniques are valid for use in tutorial work and that more frequent use of these techniques should be considered and explored. On the basis of experience gained in the tutoring sessions described in this report, the writer makes the following recommendations for persons interested in using the suggestive-accelerative learning techniques in similar situations.

1. More time should be spent initially in relaxation/visualization training than was spent in this study. Tapes for use by the student at home would be one way to meet this need. Familiarity with these techniques appears to be very important to the success of the learning methods used.

2. One session per week of 30-45 minutes duration is insufficient for the student to become saturated thoroughly with the techniques and

for the reported (Ostrander and Schroeder, 1979) "snowball effect" to come into play. Possible remedies for this include more frequent sessions and/or taped reinforcement of the material between sessions.

3. More methods for presenting lesson material in a vivid, attractive manner during the active phase of sessions should be developed and shared. This constitutes a very time consuming portion of preparation for sessions.

4. It appears that the teaching of root words, prefixes, and suffixes in addition to words and definitions holds promise for learning vocabulary by suggestive-accelerative methods. Further investigation of this possibility should be made.

This writer intends to explore further the application of suggestive-accelerative learning techniques to tutorial situations. It is hoped that other teachers and researchers will also share results of their efforts in this direction.

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### RAPPORT SUR L'UTILISATION DES TECHNIQUES D'APPRENTISSAGE SUGGESTIVES-ACCELERÉES POUR COURS PARTICULIERS DE VOCABULAIRE EN PRÉPARATION DE L'EXAMEN SAT.

Des techniques d'apprentissage suggestives-accelerées dont la relaxation et la visualisation ont été utilisées en cours particuliers de vocabulaire pour préparer un élève d'école secondaire au SAT (test d'aptitude scolaire). Un total de 245 mots peu usuels ont été présentés au cours de six sessions. Pour des tests de 104 mots choisis au hasard ainsi que des définitions, l'élève a obtenu 81% de réponses exactes. D'autres sujets traités au cours de ces sessions étaient de diminuer des sentiments négatifs relatifs à l'examen SAT, et de susciter une attitude positive de succès lors de l'examen.

Ein Bericht über die Verwendung von suggestiven, beschleunigenden Lernmaßnahmen in dem Privatunterricht von Vokabeln lernen in Vorbereitung auf den Scholastic Aptitude Test (Prüfung der akademischen Fähigkeit) (SAT) Suggestive, beschleunigende Lernmaßnahmen, einschließlich

Entspannung und Vorstellungskraft, wurden angewandt, um einen Schüler im vorletzten Schuljahr in der Sekundarschule für das Ablegen des SAT vorzubereiten. Während sechs Sitzungen wurden im Ganzen 245 nicht-alltägliche Wörter vorgeführt. In Prüfungen von 104 zufällig ausgewählten Wörtern und Definitionen erreichten die Schüler ein allgemeines Resultat mit einer Genauigkeit von 81%. Andere Themen, die während der Sitzungen angesprochen wurden, waren der Abbau negativer Haltungen in Beziehung zum SAT und die Hervorhebung einer positiven Haltung auf Erfolg der Prüfung gegenüber.

REPORTE SOBRE EL USO DE LAS TECNICAS SUGESTIVAS ACELERADAS EN LA ENSEÑANZA DE VOCABULARIO PARA TOMAR EL EXAMEN "SCHOLASTIC APTITUDE TEST" (SAT)

Las técnicas de aprendizaje sugestivas-aceleradas incluyendo relajación y visualización fueron utilizadas para enseñar vocabulario a un estudiante de tercer año de secundaria. La meta era prepararlo para tomar el examen nacional "The Scholastic Aptitude Test" (SAT). Un total de 245 palabras no cotidianas fueron presentadas en seis sesiones. Luego se le dieron exámenes que incluían 104 palabras y definiciones escogidas al azar, el estudiante obtuvo el 81% de las palabras correctas. Durante estas sesiones también se redujo la actitud negativa que el estudiante sentía hacia el examen (SAT) y se creó una actitud positiva y de éxito hacia el mismo.

## **Introducing Relaxation Training in Swedish Schools**

by  
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University of Karlstad, Sweden  
and  
Lars-Eric Unestahl  
University of Orebro, Sweden

### **Abstract**

This study explains the introduction of relaxation training into athletic training at a grammar school in Sweden. It shows that systematic relaxation training has produced suprisingly positive effects, considering the brief and simple program and the short duration of the relaxation training;

### **The Project**

Many people today practice and use relaxation for different purposes. For example, the purpose could be to rid a patient of a phobia or to give mental training to an athlete. The basic methods are one and the same although the application of the methods differs.

There are numerous advantages in learning relaxation at an early age. The natural relaxation which a child masters from the beginning, but which is reduced or disappears entirely during the years of growing up, may be easier to recapture at an early age. At that time the learning of relaxation is also more detached from the special problem areas which, in later years, often are reason for seeking relaxation training.

Relaxation seems to be nature's own tranquilizer (medicine). It also gives a series of other positive effects: rest and recuperation, saving of energy, greater possibilities for gaining self-control and self-influence.

Even if reduction of tension is mentioned in the Swedish curriculum, little seems to have been done about it. A greater emphasis on relaxation as an aid to, for example, greater understanding of the bodily functions is made in the preliminary suggestions for the new curriculum in athletic training, which is now being prepared.

The project, defining, accomplishing and evaluating relaxation was carried out by one of the leaders of the project in a grammar school in Karlstad, where he held a position as a teacher. The test period was six weeks long and involved all pupils in the fourth, fifth and sixth grades. In total there were 303 pupils from the ages of ten to twelve in the



project. The idea was to find out what a brief and simple relaxation program at the end of athletic lessons would produce in short and longterm effects within as well as outside the school.

## Methods

The relaxation program of 5 - 7 minutes were varied concerning content and mode of presentation according to the following: Design I, taped instructions; Design II, oral instructions; Design III, personal relaxation to music; Design IV, personal relaxation without music. The four designs were evenly proportioned between the three school grades.

Checks were made before, during, and after the training sessions through inquiries to teachers, parents and pupils. There were two different inquiries, one about pupil reaction and one about mental and somatic anxiety. Observations, interviews and essays were also used as methods of checking. There were hardly any absentees, and these varied between 0 and 7 percent during the checks. The data was processed in the data programme SPSS (Statistical Package of Social Sciences) according to background factors such as sex, grade level and design.

## Absentees

The number of pupils absent at the actual times the experiments were carried out are listed in the table below:

Table 1 No. of absentees during the two actual experiments

| Test            | Boys |   | Girls |   | Total |   |
|-----------------|------|---|-------|---|-------|---|
|                 | n    | % | n     | % | N     | % |
| Anxiety Nov.    | 8    | 5 | 7     | 5 | 15    | 5 |
| Anxiety Dec.    | 14   | 9 | 13    | 8 | 27    | 9 |
| Experiences Nov | 0    | 0 | 0     | 0 | 0     | 0 |
| Experiences Dec | 10   | 7 | 10    | 7 | 20    | 7 |

Considering that the percentile amount of absent pupils is rather low, and that the decrease may be regarded as being a matter of chance, we have not deemed it necessary to make an analysis.

## Results

The pupils experience of the relaxation training has been evaluated through inquiries, interviews and essays. The inquiry forms about

reaction were filled in on two different occasions; after three weeks training and at the end of the test period. The questions were formulated in order to define the following: general attitude towards relaxation, views on content and application of such, feeling during relaxation, feelings after relaxation, ability to use self-training.

## Population

The research work was carried out at the Fredricelunds School in Karlstad at the end of the Autumn Term on 1975. All the pupils in grammar school grades took part in the experiment. The table below shows the number of pupils by grade, class and sex denomination.

Table 2. Number of pupils by Grade, Class and sex.

| Grade 4 |    |    |    | Grade 5 |    |    |    | Grade 6 |    |    |    | Sex  |       | Total |
|---------|----|----|----|---------|----|----|----|---------|----|----|----|------|-------|-------|
| A       | B  | C  | D  | A       | B  | C  | D  | A       | B  | C  | D  | Boys | Girls | N     |
| 26      | 26 | 28 | 24 | 28      | 26 | 28 | 28 | 21      | 26 | 21 | 21 | 150  | 153   | 303   |
| n = 104 |    |    |    | n = 110 |    |    |    | n = 89  |    |    |    |      |       |       |

A study of the tables depicting the summarized results from the first check (test period) will show that the general attitude towards relaxation training is extremely positive. After three week's training, between 80 and 90 percent state that it is both pleasant and rewarding, while 8 percent stated that they did not want any relaxation training. Three-fourths of the pupils want relaxation training during two or more athletic lessons per week, and half of them want to extend the training sessions to other subjects in school.

The usual feelings during relaxation are heaviness of body (74%), warmth of body (55%), lightness of body (51%), sinking down (50%), floating away (23%), and complete detachment from everything (42%). 70% of the pupils experience feeling good afterwards as well, and one-fourth state that the feeling remains all day.

Amongst the long-term effects it may be mentioned that about half of the test subjects experienced that school work was easier to manage and that the ability to concentrate had increased while more than half the test subjects experienced becoming calmer, happier, and more self-confident. Over 60% have tried to practice relaxation at home, and one-fourth practice regularly.

A questionnaire was made up of 20 questions concerning the three areas of anxiety, psychosomatic problems, and experience of school. The first check was made before the pupils knew about the impending

test, and the second was made after the end of the test after six weeks.

When studying the tables showing the summary of results, it may be seen that 63% of the pupils feel it is pleasant to go to school while 22% would not like to go to school at all. More than half of them are nervous before an exam, and one-fourth of them get nervous when the classroom is too noisy. One-fourth had fairly regular stomach pains or headaches. The same amount felt lonely or afraid of the dark.

After the test approximately 10% more pupils never experience stomach pains, headaches, blushing, or feeling lonely, easily frightened and sad or afraid of the dark.

### Design

As mentioned before, the relaxation program was varied according to content and design.

1. Taped instructions
2. Oral instructions
3. Personal relaxation to music
4. Personal relaxation without music

As the aim of the tests was, among other things, to find out to what extent relaxation could be taught to the pupils at school, we were especially interested in checking what effect different relaxation programmes - design - might have on the pupils. Four different programmes were tested.

Design I: The entire relaxation program was taped, and it contained relaxation instructions for 2 1/2 minutes, as well as music, silences and awakening, for approximately 3 minutes. The total was 5 1/2 minutes.

Design II: Relaxation instructions were read out loud by the teacher, after which the music was played on the tape recorder, then silence, and after that, awakening. The total time was 5 1/2 minutes.

Design III: The pupils were told to lie down and close their eyes and try to relax every muscle in their body. Then only music was played on the tape recorder during 4 1/2 minutes. At the end of the music the pupils were allowed to get up.

Design IV: The pupils who took part in design IV were made to lie down and try to relax by themselves during approximately 5 minutes, without text or music.

During Period 1. the programmes were approximately 5 minutes long and were increased during Period 2. to approximately 7 minutes, as suggestions were inserted into all four types of programs.

In an appraisal of the data received according to design, as well as chi<sup>2</sup>-testing of the differences, it may be understood that design II has continually given the most positive effects, both concerning experience and anxiety tests.

An analysis of the results and a discussion on alternative procedures has led to the following suggestions for relaxation programs in connection with schools. One should begin with a program which is approximately 6 - 7 minutes long. The program should contain relatively easy instructions and suggestions and should preferably be presented orally by the teacher. The training sessions should take place 2- 3 times per week. After approximately 3 weeks the frequency of the sessions should be decreased as well as making the program shorter, and the content should be altered to include fewer instructions and more personal control (longer breaks, more music.)

Contrary to earlier examinations of suggestibility or hypnosis, where no difference was found according to sex domination, this examination shows a marked difference between boys and girls. The girls have consistently experienced relaxation more positively than the boys (significant differences were found between sexes in 11 of the 25 variables in the Table - Experience). Both the boys and the girls experienced positive effects from relaxation (anxiety test) but in partially different areas. Thus, the girls received significantly fewer of the experience variables such as, "I am easily frightened," or "I often feel sad," while the boys received a marked decrease in somatics, such as headaches and stomach pains.

### Observations

Checking the results of the less systematic observations which were made and which are not shown in results, it may be mentioned that initial difficulties arose in most classes but did not last long. After 2 - 3 sessions the pupils generally seemed to achieve proper relaxation and the effect increased with continued training. The degree of relaxation documented in the Table of Experiences was also proven by the fact that the pupils lay completely inert and did not react to distracting noises. Both the position of the body and facial expression showed complete relaxation.

The relaxation training was concluded with a short session of questioning, and some interviews were made on a few other occasions. Some of the pupils' personal experiences are also shown by way of essays.

### Discussion

After the study, presented in this paper, other studies with similar designs but on various age-groups (in other grammar schools as well as high schools) have already been made. The last study we made was an attempt to construct and test relaxation programs for

preschool-children. The results, in general, have been so promising that the Swedish National Board of Schools has now made relaxation training a part of the Physical Education in the new curriculum from 1979.

Now we want to proceed with new projects. One planned project is to make a closer investigation of those pupils having negative attitudes toward relaxation training (10%). Another planned project will try to find programs for children with special needs and test these programs specialized education program in the grammar school. A more controlled and applied form of relaxation may be used for these children.

Tension elimination and relaxation may be of significant value in the development of pedagogical research work. An important area is the views and suggestions which have emerged from the insight into the fact that, up to now, the schools have onesidedly encouraged those functions which are located in the left side of our brain. New research findings indicate that relaxation may bring about a hemisphere shift, i.e. an activation of the non-dominant hemisphere, an hypothesis which will stimulate future research about the use of relaxation in learning situations.

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#### INTRODUCTION DE LA RELAXATION DANS LES ÉCOLES SUÉDOISES.

Cette étude présente l'introduction des méthodes de relaxation dans le programme d'éducation physique dans un lycée de Suède. Elle montre que le programme de relaxation systématique a produit des effets positifs surprenants quand on considère un programme simple et bref, et le peu de temps passé en relaxation.

#### Einführung in Entspannungstraining in den Schulen in Schweden

Diese Abhandlung erläutert die Einführung von Entspannungstraining in der Sporterziehung einer Grundschule in Schweden. Es wird bewiesen, daß systematisches Entspannungstraining erstaunlich positive Wirkungen hervorbringt, in Anbetracht des kurzen und einfachen Programms und der begrenzten Zeit, die dem Entspannungstraining zugeteilt ist.

#### INTRODUCCION DE TÉCNICAS DE RELAJAMIENTO EN LAS ESCUELAS DE SUECIA

Este estudio explica la introducción de las técnicas de relajamiento al programa de entrenamiento atlético de una escuela primaria en Suecia. El mismo demuestra que el entrenamiento sistemático en relajación ha producido efectos sorpresivamente positivos, teniendo en consideración la brevedad y simpleza del programa y la corta duración del entrenamiento en relajación.



**Suggestopedia:  
Easier Learning the Natural Way**

by

Philip Miele

Reviewed by Janet Miller,

North Seattle Community College

I have just read another contribution to the field of Suggestopedia, the use of suggestion in education. Along this same line in 1970, Ostrander and Schroeder introduced Georgi Lozanov's stress-free rapid learning concept with their book *Psychic Discoveries Behind the Iron Curtain*. In 1979 they published their monumental expansion of the subject matter in the popular book *Superlearning*. Schuster, Benitez-Bordon and Gritton produced the *SALT manual* in 1976. Owen Caskey presented his design based on suggestive-accelerative learning in 1980. Also in 1980, Prichard and Taylor published their views. These five publications come to my mind as basic texts in the field of suggestive-accelerative learning based on Lozanovian concepts.

In this newest book, Miele outlines the usual historical background of Georgi Lozanov and the involved tale of the development of the suggestopedic mode. There is the usual outline of the student belief system which causes resistance against learning - barriers which must be dealt with if accelerated learning is to take place. The modes of dealing with these barriers constitute the frequently described theory as it is originally outlined in Lozanov's text translated from Bulgarian into English, and reviewed in the *SALT Journal*, Volume 3, Number 1 by D. H. Schuster.

Miele shows us how Suggestopedia came to the United States and in what ways it is appearing here in educational and commercial areas. There is a thorough comparison of the Lozanov approach and the American version under the name of S.A.L.T., the acronym for Suggestive-Accelerative Learning and Teaching. American Public Schools are limited to 50 minute class sessions, and therefore there is an outline for the presentation of a typical structure for this time period. This outline is reminiscent of the *SALT Manual* itself.

What is it then that Philip Miele's book contains that is an unique contribution? Why add this book to the others in my library?

One contribution to uniqueness may be a matter of style. As a

student, I made it a habit to consult a variety of texts on the same subject matter in the hope that one author or another might have a different slant on the material that would clarify or expand basic ideas. Miele's book does this for me. And certain anecdotal detail tends to remove his presentation from the strictly academic or journalistic approach. One point of style is the author's use of the "liberated" but non-neutral pronoun "she" rather than the traditional but still non-neutral pronoun "he". This approach, although somewhat distracting, has the effect of underlining the idea that here we are dealing with new-age progressive concepts.

Another addition the author brings is his expansion of subject matter touched on by other authors. He uses personal quotes from Dr. Lozanov's theories of education and suggestion. He elaborates on the use of suggestion as it occurs in Silva Mind Control classes. There is a discussion of the power of subliminal stimulus on learning although Miele warns that Lozanov is not fond of the overt use of such sub-threshold communication.

A rapid run-down on the use of music brings forth some small detail from Ragriana Belanger's *La Suggestologie* as well as a tantalizing introductory view of Senticis, an emerging science which is providing evidence of the universality of music.

One chapter depicts the Bulgarian use of Suggestopedia in its global approach. This global approach is the creative interweaving of such subjects as mathematics, writing, natural sciences, literature and music, and physical education. As a teacher, I appreciate the artful movement and joining together of the skills and content of the subject areas, but I am overwhelmed by the thought of the time involved in the preparation for this creative mode.

Another chapter details the development and philosophy of the school called Interlocking Curriculum which uses principles of suggestology. This school was established in Silver Spring, Maryland by Nancy and Peter Kine. Yet another chapter deals with the concept of healing through learning. The therapeutic value of Suggestopedia is developed by Miele's description of Dr. Cecelia Pollack's work with students who have learning and behavior problems. The last chapter of the book, the lucky thirteenth chapter, deals with how one can use Suggestopedia for self-instruction.

Dr. Donald Schuster, Professor of Psychology at Iowa State University has provided an Afterword. An appendix was written by Dr. Cecelia Pollack, Professor Emeritus of Education at City University of New York.

The method of distribution of this book is somewhat novel. It is marketed by a multi-level sales plan which allows any purchaser to become a distributor of the book thus enabling each purchaser to earn

commissions on subsequent sales. It is a pyramid distribution system,  
the last unique characteristics of this book.

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## Simultaneous Multi-Lingual Accelerated Learning Program\*

Tomimoto Amano

### Abstract

Mr. Amano explains the SIMULAX language learning system, which he has developed and is using in Japan. In this method one is working with three languages simultaneously—English, Japanese, and Chinese. There is frequent usage of right brain activities, particularly of images. Mr. Amano also explains his understanding of the theory and practice of the principle "three-in-one."

Good morning, ladies and gentlemen!

My name is Tom Amano, and I'm the President of the Accelerated-Learning Institute of Japan. I have come here from Japan to tell you about our Simultaneous Multi-lingual Accelerated-Learning Program, or SIMULAX.

Let me please give you some idea of the beginnings, and development, of my research into how man learns and, in particular, how man can learn *fast*. This research extends over a long period during which I have been deeply studying and practising the oriental teachings of Zen, yoga and meditation. My interest in language stems first from my earliest upbringing as a Japanese national in China and later in Korea. My early schooling was in China, and in Korea. I completed high school and university. My education continued for another twenty years through the medium of the Chinese, Korean and Japanese languages. I had been teaching for eight years in Seoul and Tokyo supported by my earlier long educational experience. Later I was employed by Japan Air Lines for twelve years in the VIP Services Section assisting Asian visitors. Arising from the above position as interpreter, I accumulated a wide linguistic experience which then began to induce me to envisage the possibility of establishing a language learning institute, which is now instructing students with Simultaneous Multi-Lingual Accelerated-Learning, that is: SIMULAX. Therefore, I think I can say that my experience relevant to what I now practice has spanned a period of forty years.

The difficulties in communication which I encountered in people whose job it was to communicate, either as diplomats for their respective countries or as representatives of national or international

\* Paper presented at the SALT Conference, April 28-30, 1982.

organizations, led me to inquire whether there was not a more efficient and rapid means of acquiring a foreign language than the customary pedestrain methods. My search led me to the ideas of Dr. J. H. Schultz, founder of Autogenics, and those of Dr. G. Lozanov, founder of Suggestology and Suggestopedia. These, in turn, linked to my experience of oriental spiritual practices, and I was finally encouraged to leave my airline work and devote myself to research into methods of language teaching and learning. I should say at this point though that the method of language teaching used in my Institute is very different from Dr. Lozanov's, but it was through his work that I came to realize what might be possible. I should also say that everything we do is designed on the basis of Japanese psychology to suit Japanese learners. For the system to be used successfully for students of other nationalities, certain modifications would probably have to be made.

I am in some doubt as to whether I can explain my method adequately in the time available to me, but I shall do my best and hope that I will be able to give you a clear idea of how we proceed.

In the Accelerated-Learning Institute of Japan, we aim at the coordinated use of both the right and left halves of the brain, and the Institute itself is the outcome of research into how to make the best use of both sides of the brain, partly by the use of music tending to induce an alpha brain wave rhythm. I will begin by describing the facilities in our classrooms, and briefly mention some of the reasons for them. Then I will outline how a class is conducted. I will discuss some of the results we are obtaining with the SIMULAX method. And finally, I would like to invite you to participate in as much of a mini-lesson as time and our present facilities will permit.

When you enter one of our classrooms, you see that there are five loudspeakers: two at the front, two at the back, and a large, very-low-frequency one on the floor. The front speaker on the left is used to play music, and that on the right is for speech. Musical sounds entering the left ear from this left-hand speaker travel largely to the right half of the brain and are converted into images in the listener's mind. On the other hand, the major portion of the speech from the right-hand speaker goes via the right ear to the left brain.

Different languages, though, seem to be learned differently by the brain -- some, more on the right, others, more on the left. This is suggested to me by a combination of my reading and for example, of Blakeslee's book, *The Right Brain* (1980) and of my experience of image formation in language learning and meditation. Left-brain languages include English, Korean and, I beleive, other alphabetically written languages, like Spanish and French; but Chinese, for example, which is a directly image-generating language, is mostly memorized by the right brain. We shall return to this in more detail later.

From the right-hand speaker, then, comes speech in a language being studied; and through the left-hand one, music is played. However, during periods of relaxation, alpha-wave music is put out by both speakers at once so as to have a certain stereo effect.

In the classroom, there are thirteen chairs, including one for the teacher, so that he can judge for himself the level of vibration that the students are experiencing. Now, vibration is perhaps a surprising subject to refer to in relation to chairs. But these are very special chairs, and they vibrate. Built to a special order after a long period of research by Japan's Pioneer Company Ltd. (specializing in stereo equipment), they incorporate plates that can be made to vibrate in three separate locations, one at the bottom of the spine of a seated person, under the coccyx, and the other two in the small of the back, one on either side.

The purpose of these vibrating plates is to apply low and medium-low-frequency vibrations of music or speech, synchronized with those emerging from the speakers, more or less directly to the spine. Thus, a man's deeper voice will make the plates vibrate, but a female voice will not. Now, if lesson material is recorded so that the questions are asked in a woman's voice and answered by a man in the language under study, since only the replies will cause the chairs to vibrate, they will be transmitted directly to the bodies of the students. I believe that this kind of reinforcement naturally stimulates and facilitates the learning process, and as a result, to some extent, the students' speaking ability, but our results with and without the chairs have shown no significant differences as yet.

The frequency of the vibrating plates is about 100 Hertz, which seems to be the most beneficial frequency for the human body. Vibrations of about this frequency have a relaxing effect, and cause none of the distress experienced with those of 20 Hz or 10 Hz, which form a large percentage of the harmful noise pollution in the vicinity of highways, for example. And with strong vibrations of 500 Hz or above, there is the risk of bringing about an epileptic fit; or at the very least, such frequencies make it impossible to remain seated for any extended period. For these reasons, we chose 100 Hertz for these chairs.

But let me explain the purpose of these built-in vibrating plates more specifically. The lowest one vibrates directly under the coccyx. These vibrations travel all the way up the spine to the brain, stimulating both halves of it. With these chairs, we have found that even those who have not for a long time undertaken any kind of study find that not only is learning made easy, but their powers of intuition, retention and thinking are also improved. Moreover, the spine, on which our health depends so much, is invigorated by the vibrations passing through it, and our students have reported improvements in a variety of internal disorders and spinal injuries. And after all, since spinal disorders may



lead to pain and other problems in various locations, or to a general feeling of debility, anything that can offer benefits to this all-important structure is likely to be of great value. The vibrations of the other two plates, which are on both sides of the spine, are thought in Japan to stimulate the internal organs, for example improving the digestion of dyspeptics.

My idea in having these chairs developed was to enhance the health of the whole body as well as to stimulate brain function. Applying a vibratory stimulus close to the brain, however, can be very dangerous, as a blow can, and so the vibratory action of the chairs is carried out at the base of the spine, and the appropriate gentle stimulation reaches the brain indirectly.

A final special feature of our classrooms is their purple carpets. Of the whole possible range of attractive colors for carpets, only purple has been chosen. Its short wavelength and high frequency (as compared with the low-frequency long waves of the colors at the other end of the spectrum, such as red) have a restful psychological effect on a person looking at it for an extended period.

Let us now take a look at how and what we teach in these classrooms. The students are in general native Japanese speakers, and at first we tried teaching them English, Chinese and Korean in Japanese in the same course, but the use of four languages in a three-hour class proved too much for the first students at the Institute. We therefore dropped the Korean and are now teaching English and Chinese simultaneously. After only two months of study, in two three-hour classes per week, students achieve facility with the basic phrases and sentences of these languages. We shall deal more specifically with these remarkable results in a few minutes. However, in other classes that I have taught using the SIMULAX method, students have very successfully handled all three languages.

This is how a class proceeds: At the beginning, a kind of massage through music is carried out with the help of the vibrating chairs in order to bring the students into a stable, relaxed state. This is achieved by playing about five minutes of music incorporating strong bass notes, which help to relieve fatigue. After this, music containing inaudible vibrations at the same frequency as those of the alpha brain-wave rhythm or other music tending to bring about the deeply relaxed alpha state, both of which I shall call "alpha music", are played together with the initial spoken material for the class. Various kinds of alpha music are available, some produced in the United States, some developed by our Institute in Japan. What we mainly use in our classes is music intended for the purposes of meditation, yoga practice and medieval Christian worship. Against a background of alpha music, the voice on the tape leads the students as follows:

"Now, close your eyes, please, and let your whole body relax...", and so on, according to the autogenic relaxation routine of Dr. J. H. Schultz. During this period, which lasts for about twenty minutes, all the students fall into a deep state of relaxation, often losing any awareness of where they are. The lights are kept low throughout the alpha music, and then they are turned up again as the students are returned to the everyday beta-wave state. As they are returning to this state, they begin to review the previous lesson's material. In a response to Japanese phrases read in a loud voice by the teacher, the students reply with the English or Chinese equivalents. Then, the teacher reads English expressions to which the students respond loudly with Chinese or Japanese, and so on, switching languages from day to day so as to avoid any monotony. Early in this procedure, the students' brain wave rhythm returns fully to the beta level.

When this review period is over, study for the day begins. In this method, English sentences written on the blackboard are translated by the students into Chinese, after which the English sentences are removed and the students have to translate back from the Chinese. And during this two-way process, our Japanese-speaking students come to memorize both English and Chinese virtually without even being aware of it. It is quite a new experience for them to learn anything so well, so easily, and so pleasantly.

But let us consider why people should be taught such different languages as English and Chinese at the same time. After all, even their writing systems are completely unlike, one being alphabetic, the other ideographic. This question is answered with an example from my research and that of others. When the English word *mountain* is seen, processes in the left brain convert its arrangement of letters into the word and the sound "mountain", and this passes to the right brain, where it generates the *image* of a mountain. With Chinese, on the other hand, when the character for mountain is seen, it immediately gives rise to image of a mountain, and image-formation is a right brain activity. Now, if both English and Chinese are studied at the same time, I have discovered that the memory tends, when the mind is relaxed, to retain either one or the other, or even both, whereas it is very easy to forget when only one is presented to the mind. But with both languages presented, the student is capable at least of replying with one foreign equivalent, whether it be English or Chinese. This bilingual study continues for twenty minutes, a period selected to avoid tedium.

Next, the lights are turned down again, and students close their eyes as the sentences and words they studied in the previous period and on the previous day are read by a native speaker against a background of music. They listen to, and may repeat, these for the next twenty minutes in the following way: a Japanese native speaker first speaks a

phrase such as "Ohayo gozaimasu", and during a 3 to 5 second pause for their response, the students reply, for example, in English, "Good morning". Then the voice of a male native English speaker reads the correct English, "Good morning", followed by a similar pause. During the first pause, the students have time to consider whether the response they made was correct or not. If not, they can give the correct answer in the second pause after the English tape teacher gives it. On the other hand, if they have replied correctly they can just listen again to the native speaker's pronunciation. Then, the class proceeds to the next phrase in Japanese, and so on.

In this system the student monitors his own learning and progress, checking for himself how much of the previous day's study material he remembers, in such a way that he does not become self-conscious about his errors. As a result, even Japanese students, who tend to be very reticent about opening their mouths in class in case others hear their mistakes, take part loudly and willingly!

After this part of the class, which again lasts for twenty minutes, the lights are again turned up, and the new lesson material is given. This consists of sentences in English that are presented on a chart on the board and explained to the native Japanese-speaking students, and then translated into Chinese by the teacher. As before, the English is then removed from the board, and the students practice translating them into English. This type of activity facilitates a transfer of information held in the right brain to the left brain, and vice versa. And as such transfers take place, the brain develops a new mode of functioning, and the student's language ability grows. We are planning to conduct further experiments on the extent of validity of this theory.

Next, we proceed to the closed-eye section of the new lesson. During this period, the students must translate sentences that they have *not* heard before, from Japanese into either English or Chinese, the target language being switched every day or every other day. A woman's voice reads a sentence in Japanese, for example, "Kore wa pen desu," and, during the pause that follows, the students translate as best they can into the target language. A man's voice then gives the correct version: "This is a pen." The students can see if they were right or not, and correct themselves if necessary. This, too, is a twenty minute session, and, throughout it, alpha music is being played as a background. Since it is playing, as the student listens to the material and translates it aloud, he is not disturbed by the other students' voices, even with everyone speaking at once.

The lights are then turned back up, and the students return to the beta level state, during which various explanations of theory are given in relation to the day's study material. In the SIMULAX system, we find that, if the students do not understand the theory behind the

sentence structures they are learning, they cannot progress. The degree of detail given in the explanations depends on the amount of time available.

So far, the students have been studying sentences that enable them to grasp language structures. But now, they make use of a book containing 777 fundamental sentences, selected on the basis of sentence frequency counts performed by computer in the United States. These numbered sentences are the most commonly used sentences in English, translated into Chinese, Korean and Japanese, and they are published as reference material for the students, but are not for looking at in class. The book also contains numbered pictures corresponding with the sentences, and it is these pictures that the students look at.

The students then first spend ten minutes listening to material recorded slowly and clearly, and at the same time look at the pictures for the lesson; and next, they go through the same material at *twice* the original speed with their eyes closed for another ten minutes, both against a background of alpha music. The material is at first recited slowly, because otherwise the students are unable to catch what is said. After they have studied it once though, the repeat at the faster speed is more easily understood, especially since they are in a more relaxed state.

Thus, that is the way we proceed--alternating between alpha and beta levels for periods of twenty minutes each with a different type of content each time. And the students say that the three hours seems to pass in a flash, as they almost effortlessly absorb two languages at the same time! That's the end of study for the day.

I'd now like to say something about why and how we use images in the SIMULAX system. The main reasons are that images help to stimulate learning and memorization and that there seems to be little practical difference from this viewpoint between young and old. In the Institute, our students range in age from 16 to 65, and they all achieve virtually the same level of proficiency within the same time. This is, of course, a rather remarkable result since in general in the beta state 16-year-olds learn much faster than grandfathers because their memories are more retentive in that state. But that sort of thing has little bearing on what takes place in our Institute. As for the SIMULAX method of using images, we proceed as follows: After bringing the students to a relaxed state, we ask them to form an imaginary screen behind their closed eyes and then to project an image of an object, place, person, or even of a picture on the screen. For conversations, we suggest that they project on the screen a living image of a person they know of and like and who speaks the language in question (for example, a movie star). Since Japanese people tend to be very shy and awkward in the presence of non-Japanese, especially where the use of

language is concerned, we encourage our students, in their relaxed state, to use this "ideal image" for tension-free conversation practice. The more vivid the image, the greater the learning efficiency may be. If you have doubts about the usefulness of purposely formed images for learning, you might consider how much more vividly something may be learned through experience or from a clear picture or diagram than by mere reading or hearing on the radio or a tape. The accuracy of the images that the students use in comparison with real life is not particularly important, so that a striped, magnified cat, or a drawing, for example, can be used for a tiger, or a magnified Japanese skyscraper for the Empire State Building. But the vividness of each individual's image probably has some effect on the results of his study. In this way, then, watching the images on the screen of his mind, a student learns to speak a language more and more fluently, proceeding without anxiety.

To begin a class, the students have to be mentally concentrating. If they seem to the teacher to be rather tired, he plays them a tape on which is recorded relaxing musical sounds which help the students to achieve a concentrated state in two or three minutes. These sounds consist of, for example, the slow ringing of a bell or an extended humming sound. The mind is almost automatically drawn to the beauty of the long-drawn-out sounds, and the student simply listens to them and effortlessly falls into an attentive state. The sensation of listening to these sounds can be compared to riding an imaginary boat to an unknown destination. And when one sound fades away and another begins, one just, so to speak, changes boats. With this simple method, anyone at all can achieve a relaxed concentration in just a few minutes. This done, the class continues.

In our teaching, we follow the principle of "three in one" that was devised by Aristotle about 2,400 years ago when teaching the son of Philip of Macedon, the boy who was to become Alexander the Great, the conqueror of so much of the known world of his time. The "three in one" concept works as follows. Its first element is *contrast*: When a long thing is referred to, a short one is also presented to the mind; when a big one, also a small; when a rich person, also a pauper; and so on. The second element is *similarity*: here, we present images of similar things together for instance, members of the cat family, or certain fruits. The homophones of a language can also be utilized in this way. Every language has them. Take the English word, "match" for example. This can mean, among other things, a game like a football match, or something to light a fire with. Or "pair" -- two of kind or, differently spelled, a fruit. Or "C" the letter and "sea" the ocean. And so on. Then the third element is *association*. This works as follows: an image of a cigarette, for example, is associated with that of fire -- the fire required to light it; a table is associated with a chair; and parents with children;

or, in a series, spring with summer, summer with fall, and fall, in turn, with winter. The associations here of relationship or of succession are used to make memorization much easier than usual.

As I have indicated, this principle of three-in-one is at least 2,400 years old, being an element also of many ancient religious teachings. But I make no excuses for using what might be described by some as "rather out-of-date" methods! Such ancient principles, discovered or devised by persons of wisdom, have equal validity in the modern world, because the material on which they work is the same: *the human mind*.

Now let me show you another simple example of how we use the "concept of three" in our teaching system: Here I have a book, a pen, and a cassette tape. The way we would work is to present all three together at the same time. It is at least as easy to remember all three of them together as an arrangement - the book in the middle, the pen on top, and the cassette below - as it is to remember them individually and separately. And to take this as an example, I don't think any of you will have any difficulty in bringing these three items, in this arrangement, to mind if you think of it when you return home today. Please try it for yourself this evening!

I have not said much about the reasons for the use of an alpha state, a state of relaxed effortlessness, in the SIMULAX System, instead of the far tenser, almost strained effort generally associated with study. This is because I expect that you are all well acquainted with the recent work and literature on the subject and are aware of what is possible in such a state. Also, the practices of yoga and meditation and of Zen, as I am sure you know, offer paths by which a person may enter deeply into himself, coming naturally to an alpha state in which he can know and experience things that might seem impossible, ridiculous or fantastic to anyone in an ordinary beta state. With careful, and usually prolonged, practice, he can develop psychological and psychic faculties that are unimaginable to anyone not familiar with the methods. We use music and alpha vibrations to bring our students rapidly and easily towards such states in order to accelerate their learning.

Now, let me give you some idea of what kind of results can be expected from this method of language education. In just one or two months, a person can acquire a proficiency that would normally -- by conventional methods -- take him a whole year to achieve! This represents an acceleration of his learning by a factor of between about 10 and 15 times!

At present, I am teaching English, Korean and Chinese together in my Institute, Japan's Police Academy and at Reitaku University. After studying by the SIMULAX method, students are tested. Their average score on these tests is over 90%. With SIMULAX, we teach a total of between 600 and 700 sentences a day, whereas in an ordinary school it



is unlikely that more than about 50 would be memorized - a very slow rate. Even if a SIMULAX student should forget half the sentences he learns in a day - an unlikely event - he would still retain as many as 300! But our students remember almost all of them! Moreover, in a country renowned for the number of drop-outs from English conversation lessons (30% is *expected!*), we find that our students enjoy and benefit so much from the SIMULAX method that our attendance is virtually 100%!

I believe that results like this, which we are turning out with the SIMULAX system, especially because they are achieved within such a short period of time, and with *two* or more different languages, are nothing short of remarkable - even revolutionary! I hope that I have been able, not only to give you some idea of what we are doing and accomplishing, but also to touch you to some extent with the way that I feel, the enthusiasm and excitement about what the availability of such methods could do, not just in language teaching, but in the broad field of education as a whole.

In Chapter 7 of the Gospel according to St. Matthew are the "Ask, and it shall be given you; seek, and ye shall find." The more we study and search for better educational methods, the more we are likely, by the Grace of God, to learn and discover, and the more we will be able to contribute to the chained flow of knowledge from generation to generation.

One possibility in this direction, I like to think, might even be the Buddha's concept of thought transference. Perhaps, if it is feasible for people in general to develop an ability in this direction, it could even be used to carry out some kind of education at a distance.

We are devoting a great deal of energy and time at present in my Institute to looking into further possibilities, including greater acceleration of the learning process. We are at present in the course of preparing a text on the above principles for teaching Japanese to Westerners. With SIMULAX, it will be possible for anyone to learn to speak Japanese in a month or two. It is my wish that as many people as possible, in as many countries as possible, would strive towards better and better methods of learning each other's languages in the minimum time, if only for the contribution that mutual understanding at the level of language would make towards the peace of the world. Thank You.

### Reference

Blakeslu, William. *The Right Brain: A New Understanding of the Unconscious Mind and Its Creative Powers*. Garden City, Ny: Doubleday, 1980.

**PROGRAMME D'APPRENTISSAGE ACCELERE MULTILINGUE  
SIMULTANE.**

M. Amano explique le système d'apprentissage des langues SIMULAX qu'il a développé, et qui est maintenant en usage au Japon. Dans cette méthode, le sujet travaille trois langues simultanément: l'anglais, le japonais et le chinois. Le cerveau droit est fréquemment utilisé, surtout pour les images. M. Amano explique aussi sa conception de la théorie et de la pratique du principe "three-in-one."

**Ein gleichzeitiges mehrsprachiges beschleunigtes  
Lernprogramm**

Herr Amano erklärt das SIMULAX Sprachlernsystem, das von ihm entwickelt wurde und das er zur Zeit in Japan verwendet. In dieser Methode arbeitet man gleichzeitig mit drei Sprachen--Englisch, Japanisch und Chinesisch. Der Schwerpunkt liegt auf Tätigkeiten des rechten Gehirns und speziell auf den Gebrauch der Vorstellung. Herr Amano erläutert auch sein Verständnis von der Theorie und Praxis des Prinzips: „drei-in-eins.“

**PROGRAMA DE APRENDIZAJE ACCELERADO, MULTILINGUE Y SIMULTANEO**

El Sr. Amano presenta el sistema SIMULAX para aprender idiomas, el cual ha sido desarrollado y es utilizado en Japón. Con este método se enseñan tres idiomas simultáneamente: inglés, japonés, y chino. La actividad del hemisferio derecho del cerebro, en particular las imágenes, se enfatiza frecuentemente. El Sr. Amano también presenta su interpretación y práctica de la teoría "Tres en Uno".

## THE SINGING SCHOOL: Means of Suggestion in Suggestology and in Optimallearning\*

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### Abstract

Barzakov comments on the matrix of influences which helped create suggestology and Optimallearning tm. He explores the systemic integration of means of suggestion embedded in an instructional process. The "Lozanov Effect" derived from Pavlov's theory of paradoxical phases is described. The accumulated effects of the Optimallearning tm system are outlined.

This presentation was made at the 1982 SALT Conference and included participant exercises, demonstrations, and use of music which can only be alluded to in this transcript. In Bulgarian "barzak" means accelerated.

Just imagine a small group which has gathered for a lecture on a new trend in education. Everyone is expecting a theoretical explanation. Instead the lecturer asks each person to introduce himself or herself and tell the rest the single most important thing in life. Some say awareness, sensitivity, love, support, unity, all intellectual concepts. Then a child says simply, "I want a horse." When the group finishes, the lecturer introduces himself, "Through my work I hope to give some people - since I cannot give to all, at least some people on this planet - their horse."

Much has been said already about the role of establishing rapport in suggestopedia. Rapport can be evoked in many ways. We do not necessarily need music. Even a horse may do. So today I appeal to you to join me in helping our students find their horse, their heart's desire. That's what education is for me.

My topic is "Means of Suggestion in Suggestology and in Optimallearning," and I want to share my insights on Dr. Lozanov's pioneering work in recognizing and using suggestion as a critical element of pedagogy or theory of education. And I also wish to explain additional developments since I left Bulgaria and the Research Institute of Suggestology to continue my work in the United States, Canada, and Europe.

\* Paper presented at the SALT Conference April 28-30, 1982

I assume a basic knowledge of suggestology. But what is Optimizelearning? It is a system which incorporates Lozanov's concepts in their purity yet expands into new dimensions of learning, optimizing performance and self-realization of the individual. But first and foremost it maintains the integrity of the Lozanov system itself, not just because I come from Bulgaria. It is because I have learned in the East and in the West that, when we deal with systems, we must maintain a systematic approach. Elements extracted from a system no longer function in a synergistic manner. If one has read Fritz Capra's latest book, *The Turning Point* (1982), Gary Zukav's *The Dancing Wu Li Masters* (1979), or other books on the new physics written for laymen, one has an appreciation of what I mean when I emphasize the importance of respecting the integrity of a system and coming from the essence or core.

To understand Lozanov deeply, one has to know the intellectual traditions from which his work evolved. From Ivan Pavlov, the great Russian physiologist, came the theory of the effect of light stimuli in paradoxical phases. From Uznadze of the Georgian school of psychology came theories dealing with mental set and predisposition. A native Bulgarian shares these cultural influences and grows up with a continuous exposure to diverse cultures, for Bulgaria is a country of multicultural influences, a crossroads from north to south, east to west. Traditions of parapsychology flourish along with scholarly developments in psychology. Bulgaria is also a very musical country, the legendary country of Orpheus. It is the birthplace of the Slavic or Cyrillic alphabet and boasts the oldest Slavic literature in the world. Last year the Bulgarian state celebrated its 1300th anniversary. Especially strong is the educational tradition. Illiteracy was practically eliminated in the 1920s, and Bulgaria has one of the highest levels of education per capita in the world. First-graders are taught concepts of advanced algebra even outside the Lozanov schools.

This is the matrix of influences which helped create suggestopedia. Knowing all this, observing the strengths and weaknesses of many teachers, comparing the styles of Gateva, Dimitrova, Novakov, Pashmakova, Ivantcheva, knowing what worked and what did not work in the experimental school system and with adult classes - all this gives one the perspective needed to continue to expand and refine this tradition of accelerated teaching through Optimizelearning.

Since an early age I have always been interested in orchestration, in music, art, and poetry. As a high school student, when I attended the opera I was aware of the invisible orchestration of color, instruments, intonation - all the suggestions, although I did not call them suggestions - which come with voice. And I would think: What if this could be put to work so that we could affect the mind and life in

general? I was already involved in esoteric studies, mind development, and meditation when I realized that consciously attained mental concentration may have a limited scope.

It was then that I discovered that Dr. Lozanov had already begun his experiments with suggestion and orchestration and had founded a research institute. Since the children in the Lozanov schools were completing their normal curriculum in four months, specialists such as I from the Institute were sent to teach them something else -- English, Russian, etc. Teaching takes an inner feeling, a special kind of love for the learner and for knowledge. I attribute my success in Optimalearning not just to knowing and maintaining the integrity of the Lozanov system but also to this inner feeling. Once one is in touch with that feeling, one can move on to discover new dimensions. People who have worked with Optimalearning can probably verify that this feeling can be awakened, but one needs to study carefully and internalize what is being discovered. Many of you here may well be much better teachers than I. Many of you will become masters, I hope, like Evelina Gateva, Dr. Lozanov's brilliant assistant and model instructor, or like my associate Pamela Rand. Al Huang, the Tai Chi master, gave this definition: "A master is someone who started before you." That's all. And I utterly believe that we too can become masters like Al Huang. (Music)

Lozanov provided the basis for my work, Optimalearning, which was developed here in America. It is not an eclectic collection of methods. It is Lozanov's work with new concepts and new dimensions. Lozanov gave us the foundation and the first floor. Optimalearning adds a second floor and maybe another wing. But in order to add another wing, you have to enlarge the foundation a little bit. So what is different? Lozanov gave us the exquisite *orchestration of the conscious and unconscious*. As in music with its slow movements, we feel how it goes beyond the actual rhythms of the music. It reminds us that the world consists of patterns, rhythms and intonations. To that Optimalearning adds a focus on the conscious and a strong additional development of analytical skills. (The tempo of music changes.) Sometimes we associate energy with tempo. But energy may come differently, even from change in rhythm. That is why the development of analytical skills is a joyful process, a new dimension with the same rhythmical basis. (music fades.)

Another concept in Optimalearning is the unity of teaching and learning. From Lozanov we learned how the teacher always tunes in to the students. In Optimalearning we use specific procedures to bring out the hidden teacher in everyone. The hidden creator, hidden artist, hidden genius may find expression and flourish. Then an outburst of creativity is used in a special way to feed back into the acceleration of learning. Teachers empower students. As a result one is able to solve

many problems of self-instruction. This results also in techniques which can be used to teach any subject, to learn any subject, to perform in sports, on stage, or on the job. One can optimize parenting and tutoring. All this comes from the integration and orchestration of attitudes and techniques. We still hear the music. It's still with us and the meaning is with us.

So this orchestration through which we present ideas is the most important mechanism both in suggestology and in Optimalearning. It is the complex of the means of suggestion.

### Connectedness and Means of Suggestion

What renders these means of suggestion truly effective? No matter how you master your voice, intonation, or project your dual plane as means of suggestion, these will not work well unless the instructional process itself is organized as a *meaningful, interconnected whole*. Logic is not necessarily the logic of the superordinate-subordinate. It is the more elusive logic of systemic conceptions of the world and of the human mind.

I'll give you an example. Last year I was in Tulsa visiting Marilyn Hughes, one of our leading Optimalearning instructors. She was consulting with several teachers, and I accompanied her to a fourth-grade class in the public schools. The teacher was talking about English grammar and how plurals are formed. "Fish" and other nouns were used. I think my heart was bubbling with desire. Why teach only grammar when so many other things could be taught, and the students would pick up the meaning and retain everything? Suddenly I was asked to talk to the children. I wondered what would make sense to them at this moment. But first I needed to establish rapport. Obviously, with my accent, I am a foreigner, so I asked them "What do you know about Bulgaria?" "It's far away in Europe." "Do you know where in Europe?" Here I drew a map with my hands since there was no map of Europe. "Here (voice dropping to a dramatic whisper) by the Black Sea. Why is it called black? "Well," I continued, "because when there is a storm, it gives a very interesting dark color to the waves. And in Bulgarian we say *more*. Can you hear it? *mor-eh?* (audience repeats) Of course! And it's very easy, you know. *Mo* (writing on board) *rrr* (trilled) -- we say *mo-re*. *Rrr*. *Mo-re*. Yes: *mo-re*, *mo-re*. It's like a *rrr*. *RRRR*, you see, *rrrr*, *rrrr*. Can I hear it? (audience responses) *RRRR*. That's it, very easy: *mo-re* (laughter). And old people say that there is a hole in the bottom of the sea. Have you heard that? (singing) There's a hole in the bottom of the sea..." (audience joins in the singing:)

There's a log on the hole in the bottom of the sea...

There's a hole, there's a hole...



There's a bump on the log on the hole in the bottom...

There's a hole, there's a hole...

And here we were singing about the sea. "Why is there no hole? Because the fish would escape, of course. What do we say in English, *fish*? Yes. And do we sometimes say *fishes*? Sometimes, yes, when we have what? Different kinds!" You could go into zoology, geography, oceanography, you can integrate English grammar with anything and move ahead quickly. "Do you know what the word is in Bulgarian? Fish, *riba, riba*? the same *rrr! Riba*." (audience repeats) And from here, if my objective were to teach Bulgarian, I might say, "Who likes to eat fish? You do? And do you have a pet who likes fish? Cat! *Kotka*. You see how easy? *Kotka! Kot-* meow, *kotka* (drawing a cat). Here is the *glava*, the *glava* of the *kotka*, *glava*, and here is the *tialo, tialo*. What is this? *Okko. O-ko*. Can you see it? *O-ko*. You see the symmetry? Here is one eye (laughter), *o-ko*. Very simple. Here is the *nos, nos*; simple, *nos*. Oh, what do you have here? *Ukho, ukho...ukho*. And here we have the *krak. Krak*. Of course. Let's see: *k, rr; krak, krak*. So easy: *krak. Kotka, krak*."

You can continue. "And what do you have here? *Moostak, moostak*. From one side what is it? One *k*, it's *moostak!* Simple, *moostak!*" And it can continue with the *riba*, and little by little in a very short time, you can teach the class the entire Cyrillic alphabet.

Of course, of special significance here are the rhythm, the carefully selected intonation, the dual plane, child-like state -- all contributing to the special prestige of the instructor. We're looking at means of suggestion embedded in a teaching procedure. These include specific rhythms and intonations.

Everything is rhythmic in nature and Lozanov emphasized the role of rhythm in a suggestopedic sense. Pacing is a small element. Rhythm includes the intervals at which certain things are repeated. When talking about rhythmic organization, one should also consider the external environment. In Optimal learning we emphasize, in addition to the Lozanov concept of peripheral perception, additional orchestration of the room using art stimuli in a special way. Those of you who have attended Optimal learning programs know that we use reproductions of great artists' paintings and prints. But they move in time! At specific moments in the workshop when attitudes and mental states are shifting, so too is the artistic surrounding. At the same time of critical importance is the principle of economy and balance.

When we speak of rhythm and intonation, a very important part is the ritual, the symbolic element of our work. The suggestopedic and Optimal learning teacher creates very specific rituals to begin and end a class or a specific "alerting" ritual when information is introduced. A major shift in context can also be signaled on an unconscious level by

rhythmic ritual. This major means of suggestion can be mastered with study and practice. As one's artistry develops, one can integrate multiple rhythms like the dancers and drums in a tribal ritual.

### Subtleties of Prestige

This brings us to one of the major means of suggestion, prestige. Lozanov used the word "authority," not in the authoritarian sense, but in recognition of one's authority as a very knowledgeable person. But beyond authority in the subject matter is competence and reputation as a teacher who can help learners achieve extraordinary results. It is a kind of motherly prestige, a nurturing, supporting presence that one acknowledges with great respect.

There are some subtleties here. The actual structure of the suggestopedic or Optimal learning class contributes significantly to prestige in an invisible way. Read Lozanov; he is very explicit when he talks about primary education and how to use peripheral perception. How you orchestrate the classroom, your behavior, your voice, the way you engage your students, the global activation of the brain and the principles of joy -- all constitute your prestige. Earl Stevick, a leading specialist in language instruction, says in his book *Teaching Languages: A Way and Ways* (1980) that the true prestige in Lozanov classes comes from the invisible subtleties of the process: the skillful use of unconscious elements, interweaving of techniques into "the fabric of the course," the security for the student which comes from the teacher's avoidance of the "evaluative paradigm," and the efficiency and liveliness of the instructional process.

The stronger the prestige, the greater will be the students' childlike state, that very special receptive state so important in learning. We believe, however, that the teacher must be able to move into his or her own open, receptive space in order to create and maintain that openness for students. It is an energy, a lightness that you carry within and express. It allows you as a teacher to be extraordinarily sensitive at an intuitive level to your students' reactions, apprehensions, distractions. It is your energy spontaneously and creatively to find ways to dissolve negative conditioning, counter limiting beliefs, and provide educative, non-evaluative feedback lightly. This type of prestige, the prestige of the Optimal learning teacher, is the main factor in triggering the so needed *spontaneous* memorization, *spontaneous* participation, *spontaneous* creativity. The integration of prestige and the child-like state as a means of suggestion is grounded in the ability to see more fully, to see persons in their complexity.

In Optimal learning training for professionals we include work with mime, movement and as a clown because this frees us from inhibitions

of mind and movement and opens the possibilities of seeing, as Shakespeare did, with the eye of a "fool," more clearly, more like a child. Moreover, a clown must perfect a sense of timing.

Another means of suggestion is a *concert-like pseudo-passiveness*, the state when you are very relaxed but also very alert. A lot of people think this usually occurs when you hear music or are involved in guided imagery, but that is not the case. Lozanov is talking about behavioral pseudo-passiveness, when you appear passive, but you are full of energy and perceive well. This can be achieved in many ways. In our work with Optimal learning self-instruction, there is an integration of prestige and the child-like state in which people learn very quickly to establish this pseudo-passiveness without music. One works with music later as a recapitulation of the material.

*This concert-like pseudo-passiveness is an internal attitude, a special state of mind functioning. Techniques are useful at first to help one learn to recognize and move into this state of mind. But with practice one masters the process that moves one to that state. It is like persons who first use biofeedback machines to learn to direct internal processes but who then become adept at controlling their blood pressure or similar function without the machine.*

*Obviously all these things are impossible if one is not totally sincere on both planes, conscious and unconscious. That is another important means of suggestion from Lozanov.\* We constantly operate on two levels or planes, the conscious and the unconscious. This means that at every instant, the communicator projects conscious signals, verbal and non-verbal language. I can say "Stand up" or I can give you a hand signal, which is not verbal, but entirely conscious. The second plane, which is what we are generally speaking of when we refer to dual-planeness, is mainly this stream of stimuli which flows from the communicator and is perceived by the listener, yet remains in the domain of the unconscious, more or less, of both parties. Often the receiver cannot pinpoint why he or she responds to the communicator in a particular manner, but in the vernacular it is the "vibes."*

Operating effectively on the dual plane means being 101% sincere: saying what you mean and meaning what you say. But that's not enough. There is something more -- the ability to project what you expect from your students. Because of your conscious vision of how much more you can do, this vision becomes reflected in your unconscious attitude. So the dual plane is also a *deeply internalized*

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\*In Lozanov's work you some times will find this called "double plane." The Bulgarian word *droen*, like the Russian word *dvoinoi*, can be translated as either "dual" or "double". But in English, so far as I know, "dual" connotes two different things, while "double" often means a duplication. So the more precise translation is "dual".

attitude of strong belief in the capacity of your students or clients and of yourself. It is the essence of what Lozanov calls *suggestive attitude*. The dual plane reflects your love for your students and for your work and life in general. In Optimal learning we emphasize even more the need to bring out the hidden love, the sensitivity, the soul in everyone. And this conscious vision and concern for the human mind and human soul as an internalized attitude prompts an almost spontaneous transmission of loving and caring signals to others. It forms an invisible bond between student and teacher.

### The Lozanov Effect

By orchestrating all these means of suggestion, the communicator establishes a very interesting state which I call the "Lozanov Effect." To understand it, however, one needs to know something of the Pavlovian theory of paradoxical phases. In some specific states of mind, light stimuli are those which evoke the strongest responses. In these states some processes or zones are inhibited while others are excited. The most interesting thing for the Lozanov Effect is that it produces a pleasant state of relaxation and, at the same time, the mind is naturally alert and concentrated on the task. There is a dialectical unity. So by orchestrating the means of suggestion, the communicator establishes this state which neurophysiologically represents both inhibition and excitation at the same time. This is what Lozanov has in mind when he talks of "concentrative psychological relaxation." If you can achieve this for yourself and your students or clients, you will experience Lozanov's achievement.

So what happens in this "pseudo-passive" state during a concert reading? The voice becomes a separate instrument, a unique counterpoint to the music. In 1977 I was searching for a word to convey the special relationship between the voice and the music, and "surfing" flashed into my mind. The voice rides the waves and learns to sense the underlying power of the music, respecting its flow yet mastering it for a different purpose.

Let's experience this. Any text will do, but let's read an excerpt from the book I mentioned earlier on new physics, *The Dancing Wu Li Masters* by Gary Zukav (1980). (Bach's Concerto in D Minor begins.)

My western education left me unable to accept a non-definition for my definition of a "Master," so I began to read Huang's book, *Embrace Tiger, Return to Mountain*. There, in the foreword by Alan Watts, in a paragraph describing Al Huang, I found what I sought. Said Alan Watts of Al Huang:

He begins from the center and not from the fringe. He imparts an

understanding of the basic principles of the art before going on to the meticulous details, and he refuses to break down the t'ai chi movements into a one-two-three drill so as to make the student into a robot. The traditional way...is to teach by rote, and to give the impression that long periods of boredom are the most essential part of training. In that way a student may go on for years and years without ever getting the feel of what he is doing.

Here was just the definition of a Master that I sought. A Master teaches essence. When the essence is perceived, he teaches what is necessary to expand perception.

Now what happens in a concert reading? First, when you read with music, the left hemisphere, which normally processes the sequential, logical material of the text, is required to follow the musical phrase, to note how the music is changing, to enter and pause with the music. So the left hemisphere is linked both ways. But the right hemisphere is also linked both ways. Wide open to music, the "intuitive" hemisphere sees the text and meaning as a whole. So the two hemispheres of the brain, in a cross-link, are processing the same material.

Through the music and through this integration of the hemispheres, you are also activating the limbic system, the subcortical structure which is the seat of our emotions. Psychiatrist William Grey and systems theorist Paul LaViolette (1982) have recently proposed an exciting theory of emotional/cognitive structures, which suggests that the brain handles information like a radio receiver. Perceptions, sensations, feelings are encoded in neuro-electric waveforms which become amplified into thoughts as they are recycled between the limbic system and the cortical systems. His theory of how emotions -- or more precisely, nuances of feeling-tones -- code and transform thought, activate memory and creativity, supports the kind of approach we have been using in Optimal learning to engage the whole brain.

Along with the limbic system there is the reticular formation, the paleomammalian and reptile brain which governs our basic instinct. Self-preservational instincts activate reactions we experience as anxiety or joy, elevated heartbeats and blood pressure, and other physical reactions which affect learning negatively or positively.

So we are talking of a *global activation* which inhibits counterproductive tensions and excites the emotional/cognitive structures which encode and refine information and knowledge. We are using the conscious and unconscious, the whole brain. We are not using just left and right hemispheres, but the cortical/subcortical structures, as well as the reticular formation, are activated simultaneously.

What is more, the specific state of inhibition-excitement evoked through the directed light stimuli you receive is so pleasant that you

want more. So the more pleasant and relaxed you are, the more energized you feel and the more information signals you want. So the more you learn, the better you feel; and the better you feel, the more you learn. That is the "Lozanov Effect," and you can see its clear relation to the principle of joy.

In addition, there is what we call the "Amplified Lozanov Effect." Simultaneously with the signals that carry the actual information to be learned, the language text or physics or history, the specially trained instructor sends suggestions: how easy it is, how beautiful it is, what exciting things await discovery. Do you remember the Tulsa school children? Along with the selection of content (*kotaka, more*), one sends invisible signals of support, care, excitement. These suggestions are verbal, nonverbal, conscious, paraconscious, even telepathic, but they are absolutely integrated into the informational signals. So the more pleasant, relaxed and energized you feel, the more you hear the content *and the supportive suggestions*. On the psychological level this builds self-confidence, opens new possibilities, and liberates the mind – all simultaneously with learning the content. In other words, the more content, the greater is the desire to receive still more since the content is associated and coded with this ever-growing feeling of satisfaction. That is why I call this the "Amplified Lozanov Effect"; simultaneously, on both the physiological and psychological levels, one feels more liberated and stimulated.

In Optimalearning we add what our colleagues in Edmonton call "Barzak Effects One and Two." As you become so excited and integrated, we must look at an additional focus – how this energy can be used to analyze material better. It is like a special thought training to perceive the world as a system. Students are better able to perceive individual parts of the world around them, but they perceive them not as isolated or separate, rather interconnected. Life and thought become a system of interdependencies and relationships. For example, a number of Optimalearning students have written us about how they have started to associate separate, apparently disparate items or events in the media with experiences and feelings of their own. It is a growing awareness of the ecological nature of our external and internal environments, our states of the world and states of being.

If you read Fritz Capra's book or other books on the new physics, you will see why we need to perceive the world and the very nature of the universe as a system. It is more expanded than the global approach in suggestology. In Optimalearning we hope to help others process and internalize knowledge as a system of interrelated elements.

In "Barzak Effect Two" students and others are helped not only to become more creative but to understand and learn through their own creativity. It is then and there that we awaken the "hidden teacher" or



"hidden genius" in each one of us. In our work with self-instruction, we help the students use their imaginations and gifts to process the information as if they were to teach it. The teacher within each person inevitably finds the motivational hooks and the new connections which have real meaning to the learner. The result of this special use of creativity is an empowering of the individual. This energy, released through discovery, grows stronger and deeper. Not only do students and teachers discover what real learning is all about, what wholeness and interconnectedness there is in life, but in our advanced programs we teach how to discover the symbolic level of the personality. It is not just the global activation of the brain, but the levels of symbol, myth, and the collective unconscious which are our human heritage. It is the power to be connected in the deepest sense to our fellow human beings and to the universe.

So we come to the "Optimalearning Effect." Start with the "Lozanov Effect," the integration of relaxation and highly focused energy; the more you learn, the better you feel and the more you learn. Add "Barzak Effects": the better you feel, the more creative you become, and the more creative you become, the more yet you learn. And finally, the more you perceive the interconnections of elements, the more consciously aware you are of the systemic nature of reality, the more you analyze and synthesize. Discovery becomes a continuous flow and new knowledge both anchors itself in what you already know and transforms and expands what you know. This gives you Optimalearning.

We speak of stimuli and attitudes, of how to orchestrate the environment, and activate the whole brain. We speak of analytical skills, of synthesis, of creativity. But how often do we speak of the soul? Using art and music, projecting care and potentiality, is a lot. But speaking of the soul or heart of another is even more important, at least for me. Within poems symbols provide a vital emotional center around which a pattern can develop. As a teacher, trainer, communicator, we must help others find that vital center within themselves. An old message; indeed. But it is my belief that if you create conditions for a person to be at their best, you free them to become optimal in every area of life and learning. This is a gift of love and of freedom.

Yes, freedom. It is not enough to free your students from their limitations. It is not enough to free them from the constant monitoring which teachers exert. We must make them one day independent of the system itself. One typical outcome with Optimalearning is that little by little people become independent of the method and get even better results.

That is the challenge: to guide, to direct, to empower individuals to achieve optimal freedom. That is the fifth principle of Optimalearning:

the teacher should be a master, whose art is transferable to students. That is not pushing the child or student by saying "It's your responsibility, not mine." Rather, you take full responsibility for using your mastery to gradually empower the students. Your nurturing prestige, like a wise mother, knows when to let go. Believe me, your students will be so thankful when you make them independent of you that only then will they really love you.

That is when you arrive at the "Amplified Optimal learning Effect," so to speak. One masters the means of suggestion within one's own life and can orchestrate learning and life, with love and freedom, ongoing freedom, and it will sing to the soul. It will sing very deeply, very intimately; as the old esoteric masters say, it has to sing to you. W.B. Yeats captured the motivations of creative minds in this poem "Sailing to Byzantium":

An aged man is but a paltry thing,  
A tattered coat upon a stick, unless  
Soul clap its hands and sing, and louder sing  
For every tatter in its mortal dress,  
Nor is there singing school but studying  
Monuments of its own magnificence;  
And therefore I have sailed the seas and come  
To the holy city of Byzantium.

Take this heart. Carry it in your work. Because through your work with this heart, my dear colleagues, your students and everyone will find their own singing school.

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L'ECOLE DE CHANT: MOYEN DE SUGGESTION EN SUGGESTOLOGIE ET OPTIMALEARNING (APPRENTISSAGE OPTIMAL).

Barzakov analyse la gamme d'influences à la base de la suggestologie et de l'optimal learning-tm. Il exploite l'intégration systématique des moyens de suggestion

insérés dans un procédé d'enseignement. Il décrit le "Lozanov Effect" dérivé de la théorie de Pavlov sur les phases paradoxales. Il souligne les effets accumulés du système d'optimalearning™. Cette démonstration a été faite à la conférence de SALT en 1982. Elle comprenait entre autre des exercices de participants, des démonstrations, et l'utilisation de musique. En Bulgare, barzak signifie accéléré.

Die Singschule: Suggestionenmittel in Suggestologie und Optimalearning™ (wirksames Lernen)  
Barzakov kommentiert über die Matrize von Einflüssen, die die Erschaffung der Suggestologie und Optimalearning™ (wirksames Lernen) förderten. Er analysiert die Integration der Suggestionenmittel in das System, worin diese Mittel in den Unterrichtsprozess eingefügt werden. Es wird auch den "Lozanov Effekt" beschrieben, welcher von Pavlovs Theorie der paradoxen Phasen stammt. Die sich anhäufenden Wirkungen des Optimalearning™ Systems werden im Umriß dargestellt. Dieser Vortrag wurde am S.A.L.T. Tagung 1982 gehalten, und umfaßt praktische Ausübungen mit den Teilnehmern, Vorführungen, und den Gebrauch von Musik, Sachen die in dieser Abschrift nur kurz berührt werden können. Der Ausdruck "barzak" bedeutet auf bulgarisch beschleunigt.

CANTANDO EN LA ESCUELA: LA SUGESTION EN LA SUGESTOLOGIA Y EN "OPTIMALEARNING".

Barzakov comenta acerca de las matrices de influencias que contribuyeron a crear la Sugestología y "Optimalearning". El explora la integración sistemática de los medios de sugestión fijados en la instrucción. Se describe el "Efecto de Lozanov" derivado de la teoría de fases paradójicas de Pavlov. Se presenta un esquema de los efectos acumulativos de "Optimalearning".

Esta presentación fue hecha en la conferencia SALT en 1982 y la misma incluyó la participación de los presentes, demostraciones y utilización de música, a la cual solo podemos aludir en este abstracto. En búlgaro la palabra "Barzak" quiere decir acelerado.

## **Deprogramming Tapes in Suggestopedic Classes\***

by  
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### **Abstract**

The author discusses the purpose of suggestopedic tapes and gives advice on the preparation of such tapes. Duration, sequencing, variety, script, vocabulary, sentence length and structure, recording, and authority are explained.

Suggestopedic teachers, by virtue of their adherence to the Lozanov Method, have the following tools available to them:

- a. psychological - use of emotional stimuli;
- b. artistic - use of harmonious art forms;
- c. pedagogical - use of specific materials and techniques. Suggestopedic tapes are psychological tools which aim at removing the deep-seated emotional blocks inhibiting or limiting the individual from absorbing information believed to be either undesirable emotionally or ethically or overly complex.

The tapes should aim at reinforcing the authority of the teacher as a knowledgeable person, a non-threatening figure who guides students through new and exciting experiences and assures their short-term successes and long-term achievements. Moreover, the tapes should condition the students to work harmoniously and in a relaxed manner, making full use of those powers which lie dormant in most people most of the time.

In other words, we expect a great deal from suggestopedic deprogramming tapes. They must be able to trigger within a few short minutes a major psychological change which will convert the learner we know today into a supermnestic, enthusiastic student who neither questions the authority of the instructor nor suffers from lack of confidence pertaining to himself, the mental images of classmates, and the curriculum that is to be mastered at an accelerated pace. The entire aspect of learning is to be transformed into an experience characterized by joy and personal fulfillment. To obtain such profound change, suggestopedic deprogramming tapes must be very powerful tools indeed.

\*Paper presented at the SALT Conference April 28-30, 1982

Deprogramming tapes *can* and *do* trigger desired psychological changes on their own merit, but certainly the other facets of suggestopedia -- Yoga breathing drills and Baroque music, integrated into suggestopedic sessions *a la* Lozanov -- enhance the tapes' effect to their maximum. However, this paper concentrates on tapes alone, recognizing their potential educational value and the fact that not every one is able to take advantage of the commercial tapes available today in the United States. The terms "suggestopedic," "deprogramming," and "relaxation tapes" will be used in this paper to mean the same.

A great number of excellent commercial tapes are available today. Unfortunately, many teachers interested in suggestopedia are unable to take advantage of them. Some find the costs prohibitive. Others find the tapes ineffective or inappropriate for the level of instruction and/or class population -- either too short or too long, and in general not producing the desired effect. Disappointed yet still believing in suggestopedia, these teachers set out to produce their own tapes, tailoring them to individual classes and to their own mode of instruction. This paper offers suggestions on writing and producing such tapes. Choices of mood, subject, vocabulary, duration, pace, variety, and degree of authority are examined, together with other helpful tips and representative samples are demonstrated.

### **Guidelines For Writing And Producing Deprogramming Suggestopedic Tapes**

*Duration* Tapes for beginners should be somewhat longer than those for students already conditioned to respond to the stimuli -- five to ten minutes and three to five minutes respectively.

*Sequencing* Begin by suggesting that the student is in total control of his body and mind, and ask him to relax.

Ask the student to close his eyes and visualize peaceful, relaxing scenes, such as beautiful scenery, pleasant childhood experiences, soft colors, forgotten pastoral melodies, the soft touch of flower petals, the smell of roses, or the taste of honey, for example. Involve all five senses. Give examples, but on some tapes let the student select his own imagery. At this time a soft background music can be introduced, preferably recorded on a separate tape to afford flexibility as to volume, duration, and use with different scripts. More advanced students, suggestopedically that is, could be allowed to isolate themselves from sensual perceptions, keeping their minds blank -- an image of a blank, white or black wall might be helpful. Keep reminding them that they are relaxed and comfortable.

Suggest that the students will soon be given new and useful

information which they will absorb effortlessly and rapidly and that this information will come from the highest source of authority, their instructor.

Ask the students to open their eyes on the count of three, then count: "one, two, three."

*Variety* It is possible to use the same tape over and over but advisable to vary the content somewhat. If one wishes to integrate the lesson's theme with the deprogramming tape, one can do so by selecting vocabulary of the lesson for visual imagery. For example, in a suggestopedic seminar at the University of West Florida, one of the graduate students wrote a tape for a group of adults taking a three week course in French prior to their trip to Paris. Modified excerpts from the script are given below. For the musical selection, a French Baroque composer would be appropriate.

*Script* "Today, let us free ourselves from traditional lessons. Find a comfortable and relaxed position. Close your eyes and feel your body respond to the soothing music you hear in the background. Your breathing is slow. You are relaxed, comfortable. Now I want you to imagine yourselves walking slowly along the River Seine in Paris. It is dawn. A soft, warm light caresses the tops of the buildings. Only a few people are seen, but they are all pleasant. The city welcomes you. You feel confident, warm. Now, watch the river flow gently. Soft, pink petals fall on the water and follow the current. Breathe slowly. Watch the petals swirl, form beautiful images, collecting more and more petals. You are aware and curious. Your mind is ready to accept knowledge. Learning about Paris will be a pleasant experience for you. You will learn new vocabulary, new dialogs. Learning new words will help you to enjoy Paris and its people. At the count of three, you will open your eyes and see the new words on the screen. You will learn them easily. Your instructor will guide you safely to success. One, two, three. Open your eyes, and look at the screen." The background music can be continued if so desired.

The list of words placed on transparencies can include: "River Seine, Paris, walking, breathing, flowing, learning, confident, warm, relaxed, people, buildings" among others. The dialog can take place along the River Seine in the spring, possibly between a Frenchman and an American tourist.

*Vocabulary* In addition to thematic variations, select your vocabulary on the basis of class population which will include age, level of sophistication and occupation. However, for all types of students, avoid negative expressions such as, "You are not tense." Say instead, "You are relaxed."

*Sentence length and structure* Although suggestopedia favors early exposure to a variety of grammatical structures, deprogramming tapes



will be more effective if the focus is on content rather than form. Short, simple, even parallel grammatical patterns will not detract the student from mental visualization. Moreover, whenever possible, sentences should be synchronized with the background music.

*Recording* The recording voice should be free of all noticeable accents (foreign, social, or regional), speech defects, or personal affectations. All of the above will interfere with visualization and relaxation. The voice should be pleasant and soothing as it has to exude gentle, persuasive authority and self-confidence. No effective tape can be produced by a person who is afraid of being recorded.

The diction should be good and clear but not dramatic as appropriate in active concert and play staging. In other words, vertical swings are to be avoided while volume is kept constant.

The speed should be rather slow, with short pauses between sentences which could be marked on the script with slant bars, e.g., /you are relaxed/ Strong/ Happy/ and ready for new experiences/. It is helpful to take a breath before each sentence and then to produce the sentence on the exhale phase.

*Authority* Perhaps the most sensitive point of tape preparation is that of authoritative command aimed at guiding the student's visualizations, suggesting the ease with which the new information will be learned. The fear of brainwashing has been programmed into all of us and we resist any innovation that appears mind-bending. Yet if we are to accept suggestopedia, we must overcome our reluctance to call for specific mental performance and desired emotional responses from our students. Basically there are three groups of stock command vocabulary:

1. Words and phrases which request the student's acquiescence to what you say -- "you will learn, you will enjoy, you want to know, remember, you are relaxed."
2. Words and phrases which ask the student to repeat after you --
3. Words and phrases which create mental pictures conducive to relaxation such as warmth, peaceful, soft.

It is hoped that these guidelines might be helpful for further research in the preparation of suggestopedic tapes appropriate for individual class populations, subject matter, or cognitive learning and teaching styles. Good common sense, careful preparation, and a few tips to follow should be sufficient for anyone who desires to produce an effective tape at little or no cost.

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#### CASSETTES DANS LES CLASSES SUGGESTOPEDIQUES

L'auteur discute le but des cassettes suggestopédiques et donne des conseils pour la préparation de ces cassettes. Durée, séquence, variété, texte, vocabulaire, longueur et structure des phrases, enregistrement et autorité sont expliqués.

Tonbänder zum Entprogrammieren in Suggestopädieunterricht  
Die Autorin erläutert den Zweck der Suggestopädie-tonbänder. Dauer, Sequenz, Verschiedenartigkeit, Manuskript, Wortschatz, Länge und Aufbau des Satzes, Aufnahme, und Autorität sind erklärt.

#### CINTAS PARA "DEPROGRAMAR" EN LAS CLASES SUGGESTOPEDICAS

El autor discute el propósito de las cintas suggestopedicas y ofrece consejo en la preparación de dichas cintas. Se explica lo siguiente: duración, secuencia, variedad, manuscrito, vocabulario, estructura y longitud de las oraciones, grabación y autoridad.

## **PRIMARY SUCCESS\***

by  
Elmira K. Beyer

### **Abstract**

Primary children need alternative ways to learn and to succeed. Too many kindergarten and first grade children are failing while discovering that there is no joy in school or learning.

Using an integrated arts approach and the S.A.L.T. process, a special class in Portland, Oregon was held for these failing students during the school year of 1980-81. Students were able to learn by their own methods of perception and processing modes because of the variety of learning styles employed through the arts. The project was successful and did provide an alternative learning environment for these primary students.

### **Introduction**

Academic failure in the classroom begins in kindergarten, and by first grade it is fairly well established in the students' and teachers' minds. This failure cycle is one of the major educational problems today, and SALT could provide a realistic solution.

This possible solution resulted in a SALT project last year (1980-81) for first graders at an inner city school in Portland, Oregon. A back-to-the-basics school, Boise has a unique population of 98% minorities which includes 80% black Americans, 17% Orientals, 1% Hispanic and Native Americans. The teaching staff is dedicated, and the students are eager when they begin in kindergarten but the low achievement syndrome begins.

### **Selection**

The children were selected for the SALT class upon the basis of a test profile and teacher observations. The Quick Neurological Screening Test was administered to each first grade student to determine if there was a poor developmental level. This test is designed so that a teacher can distinguish between normal and abnormal characteristics which are likely to affect the processes of learning and behavior. I found it very effective in determining sensory input abilities and possible learning problems. Each child was also given a dichotic listening test to

\* Paper presented at the 1982 SALT Conference April 28-30, 1982.

determine brain processing: that is, right or left cerebral dominance.

Observations were made by the kindergarten teachers and the first grade teachers. They considered behavior, self-image, perceptual development, social skills, and academic progress. From this information and the test results, I compiled a profile of each first grade child. The teachers were given the results with suggestions to help each child's learning style in the classroom.

With the help of this profile for each child, the teachers met and chose fourteen children for the class. During the year two moved so two were added which made a total of sixteen children involved. Non-English speaking and handicapped students were not considered for the project. Ten of the children chosen for the class were right-hemisphere processors and extremely low academically.

### **Class Procedure**

From November to June, the children met daily for 45 minutes. The first two weeks were spent in learning to relax, to breathe deeply, and to calm the mind. Affirmations were chosen by each child to say daily before coming to school. Guided fantasy trips were part of the daily routine. The classroom teachers mentioned that after a week the students began showing great improvement in classroom attitudes and self-image.

The curriculum for the project during the year included: word recognition and reading vocabulary, spelling, language development, knowledge of the African and Asian cultures, the alphabet, the concepts of opposites, shapes, seasons, and months.

Many creative activities were used with each lesson in order to motivate the students and create a successful atmosphere. Some of these included: puppetry, storytelling, musical sounds and instruments, creative movement, games, flannel board games, visual arts, dances, and plays.

For example, when the alphabet was studied large tactile letters were used for many word games. The children chose words to go with each letter of the alphabet and then decided on a visual image to help them remember it. They made the letters with various parts of their bodies, with stretch jump ropes, and with musical sounds. They learned to recognize the letters and to use them in stories and puppet plays. They created a rhythmical chant and rondo using all of the alphabet. They sang the alphabet and listened to a version of the alphabet in rock music. They wrote the letters in sand, in water and designed beautiful paintings around one letter.

Each day before the students studied the alphabet, the preparation phase of relaxation, deep breathing and visual imagery, was done

completely. On the final day after the student preparation, the alphabet with related pictures was presented on the overhead projector. During this active presentation, the students wrote the letters in the air or on the floor. This was followed by the passive session with background music and then individual evaluations. The teacher-made evaluation consisted of recognition of letters in words and the writing of the alphabet. The results of this evaluation were 100% for all of the students.

### Evaluation of the Project

The evaluations for each teaching unit were designed by the teacher to suit the material that was being presented. Each lesson was evaluated orally and individually until later in the year when it was possible to give written evaluations to many of the students. During the year only one child showed little progress so our team arranged to have the child tested by psychological services. He was diagnosed as emotionally handicapped and is currently attending special classes. One girl was retained in first grade but she has shown much progress during the year.

Since this group of children was chosen on the basis of classroom failure, they could not be compared to the other students who were able to handle successfully the curriculum in the regular classroom. Each child in the project was evaluated at the end of the year by the teacher team on the basis of improvement in behavior, self-image, social skills, academic progress and evaluation scores in the SALT class. These successful observations were used to plan the placement of the children for the next school year.

The children are now in second grade and are succeeding. They are happy, have good self-images and have left the failure syndrome behind them. When I see them they always ask me when "SALT" is going to begin this year!" In fact, their success has brought many requests for the class from other students and parents. The SALT method did provide a solution for failing, primary students at Boise School.

Table 1 Average Evaluation Scores

|                    |      |                |      |
|--------------------|------|----------------|------|
| Animal vocabulary  | 85%  | Plays          | 88%  |
| African stories    | 90%  | Seasons        | 93%  |
| Alphabet           | 100% | Months         | 100% |
| Opposites          | 100% | China          | 96%  |
| Shapes             | 100% | Laos, Thailand | 95%  |
| Reading words      | 93%  | Japan          | 97%  |
| Children's choices | 100% |                |      |

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### SUCCES AU NIVEAU DE L'ENSEIGNEMENT PRIMAIRE

Les enfants des écoles primaires ont besoin de méthodes alternatives pour apprendre et réussir. Il y a trop d'enfants au jardin d'enfants et à la maternelle qui échouent quand ils découvrent qu'il n'y a de joie ni à l'école ni en apprenant.

Une classe spéciale a été offerte à ces enfants où l'on a abordé les arts intégrés ainsi que la méthode SALT à Portland, dans l'Oregon, au cours de l'année scolaire 1980/81. Ces élèves ont pu apprendre par leurs propres moyens de perception grâce à une variété de styles d'apprentissage utilisés à travers les activités artistiques. Le projet eut un grand succès et procura un environnement d'apprentissage différent à ces enfants ayant des difficultés pour apprendre.

### Erfolg in der Grundschule

Kinder in der Grundschule brauchen alternative Lern- und Erfolgsmethoden. Zu viele Vorschulkinder und Schüler im ersten Jahr der Grundschule erleben keinen Erfolg, weil sie erfahren, daß es keine Lern- noch Schulfreude gibt. Im Schuljahr 1980-81 in Portland, Oregon gab es eine besondere Klasse für diese Schüler, in welcher der S.A.L.T. Lernprozeß und die Methode der integrierten schönen Künste angewendet wurde. Durch die Mannigfaltigkeit der Lernweisen, die zusammen mit den schönen Künsten verwendet wurde, war es den Schülern möglich, durch ihre eigenen geistigen Wahrnehmungsmethoden und Arbeitsvorgänge zu lernen. Das Projekt war erfolgreich und verschaffte eine alternative Lernumgebung für diejenigen Grundschul Kinder, die unter Lernschwierigkeiten litten.

### EXITO PRIMARIO

Los estudiantes de escuela primaria necesitan alternativas para aprender y para tener éxito. Hay demasiados niños en "Kindergarten" y en primer grado que están reprobando y a la misma vez descubriendo que no es placentero aprender o estar en la escuela. Durante el año escolar 1980-81, en Portland, Oregon, se ofreció una clase especial para niños que habían reprobado y en la misma se utilizó un enfoque artístico integrado con el proceso SALT. Los estudiantes lograron aprender utilizando sus propios métodos de percepción y modos de procesar debido a la variedad de métodos de aprendizaje que ofrece el arte. El proyecto fue un éxito y el mismo provee una alternativa en ambiente de aprendizaje para los estudiantes de primaria con dificultades al aprender.



## Think How You Think\*

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### Abstract

Brain research since the fifties has revealed the separate and differing functions of the right and left cerebral hemispheres in human beings. Speech is located in the left side as are talents for logical, sequential thinking, organizing, and mathematics. The right hemisphere is oriented towards visuo-spatial abilities, perceiving the whole, sensory awareness and artistic skills. Most individuals favor one half or the other and are therefore "right" or "left-brained" dominant.

Since the two hemispheres perceive and apprehend things differently, it follows that to maximize learning for all students, multi-media methods should be used.

Traditional classroom methods are geared to the left-brained student because information is presented through lecture, reading, and testing in organized time periods. Students with a right-brain preference learn best through dramatic, musical, and tactile experiences in an affective environment.

Uniquely, Suggestology provides access to both sides of the brain. It is truly a "whole-brained" methodology.

This article analyzes the components of Suggestology and describes their right and left-brained characteristics. Understanding how Suggestology affects the thinking process offers clues to its success and may elicit further refinements in the system.

Most of us do not think much about how we think--we just think. It's pretty easy to do--in fact it is difficult *not* to think. Our minds dart hither, thither, and yon, *constantly* thinking. I want to call your attention to *how* you think. My thinking is, that if you think how you think, you will become aware of the way you think and, you may discover new ways of thinking. I have another goal--to relate thinking styles to Suggestology.

To make the process memorable, I am going to give each of you a handy-dandy model of your brain that you may keep always. Here is how I can do that even though I am not rich: please make loose fists with your hands and put them together in front of your chest...thumbs pointing chestward. There you have your own brain model. Your hands

\* Paper presented at the 1982 SALT Conference.

are approximately the size and shape of your brain.

The average brain weighs about three pounds, men a little larger, but the size is somewhat relative to body size. For instance, dinosaurs had tiny brains in proportion to their bodies and were not too bright while dolphins' brains are just behind human beings in proportion to body weight (Sagan, 1977).

Within our species, brain size does not seem to make much difference. Einstein's brain was of average size. It matters more what you *do* with your brain and *what you have done with it*. The wrinkledness of your brain's cortex, the outer layer, is a better indicator of intelligence than anything else.

In other words, the more folds and convolutions your brain's exterior has, the more information it holds. Here is a case where wrinkles pay off. Looking at your hand model again, the more worn and wrinkled those hands are, the more closely they reflect an experienced, talented brain. A baby's brain is as smooth as its bottom. As the baby experiences and learns, its brain becomes more and more enfolded (Wittrock, 1977).

In your handy-dandy model, your thumbs represent the frontal lobes, the area of the brain which futurists and optimists believe will continue to grow physically and functionally. I say optimists, because the frontal lobes are thought to house foresight, altruism, and social sensibilities. A lobotomized person is sadly lacking in this now-abandoned surgical procedure (McClean, 1967).

Another special feature of your brain is the language lump named Broca's area for Paul Broca, a nineteenth century French surgeon, who noticed that cadavers consistently had a raised area on the left hemisphere of the brain (Sagan, 1979).

To help you fix the location, imagine that it is a flat wart on the back of my left hand in my handy brain model. Broca also noticed individuals who had been asphasic before death had sustained some injury to the left hemisphere. It was the work of Roger Sperry and other neurosurgeons in the Fifties that clarified the separate functions of the brain's hemispheres, however (Sperry, 1971). For this work he awarded a Nobel Prize in 1981.

Before I describe Sperry's model of thinking styles, I want to give you a short test to help you determine whether you are "right or left brained." Later, I will describe some of the characteristics of each.

Please answer the questions quickly without pondering their content:

1. WHEN YOU WALK INTO A THEATER, CLASSROOM OR AUDITORIUM, IF THERE ARE NO OTHER INFLUENTIAL FACTORS, WHICH SIDE DO YOU PREFER TO SIT ON? Right or left:

2. DO YOU OFTEN HAVE HUNCHES? Yes or no? WHEN YOU HAVE THEM, DO YOU FOLLOW THEM? Yes or no?

3. DO YOU HAVE A PLACE FOR EVERYTHING AND EVERYTHING IN ITS PLACE? Yes or no?

4. IN LEARNING A DANCE STEP, IS IT EASIER FOR YOU TO:  
a. learn by imitation and getting the feel of the music OR b. learn the sequence of movements and talk your way through the steps?

5. DO YOU LIKE TO MOVE YOUR FURNITURE SEVERAL TIMES A YEAR OR DO YOU PREFER TO KEEP THE SAME ARRANGEMENT? Move or same?

6. CAN YOU TELL APPROXIMATELY HOW MUCH TIME HAS PASSED WITHOUT A WATCH? Yes or no?

7. SPEAKING IN STRICTLY RELATIVE TERMS, IS IT EASIER FOR YOU TO UNDERSTAND GEOMETRY OR ALGEBRA? Geometry or algebra? TO SCORE: add the number of answers you had which match these:

1. right; 2. yes and yes; 3. no; 4. a; 5. move; 6. no; and 7. geometry.

The higher your number, the more apt you are to be right-brained; the lower your score the more "left-brained" your thinking style.

The group was then polled and the class profile was charted. This chart was presented to clarify left and right characteristics and to show how the test score would fall on a continuum. There were nine points on the class test:

#### RIGHT-BRAINED

#### LEFT-BRAINED

|                              |   |   |   |   |   |                         |   |                    |
|------------------------------|---|---|---|---|---|-------------------------|---|--------------------|
| 9                            | 8 | 7 | 6 | 5 | 4 | 3                       | 2 | 1                  |
| intuitive . . . . .          |   |   |   |   |   |                         |   | intellectual       |
| holistic, global . . . . .   |   |   |   |   |   |                         |   | linear, sequential |
| emotional . . . . .          |   |   |   |   |   |                         |   | rational           |
| minor . . . . .              |   |   |   |   |   |                         |   | major              |
| simultaneous . . . . .       |   |   |   |   |   |                         |   | ordered            |
| receptive . . . . .          |   |   |   |   |   |                         |   | active             |
| synthetic, Gestalt . . . . . |   |   |   |   |   |                         |   | analytic           |
| facial recognition . . . . . |   |   |   |   |   | reading, writing, names |   |                    |
| abstracts, art . . . . .     |   |   |   |   |   | math, concrete          |   |                    |
| space-oriented . . . . .     |   |   |   |   |   | time-oriented           |   |                    |
| tactile, sensory . . . . .   |   |   |   |   |   | theoretical             |   |                    |

Because the word "test" is emotion-laden, especially for educators, I would like to make some disclaimers about this one and the split brain theory. It is very general and a model which is useful in explaining thinking styles and behavioral patterns. However, the research is

ongoing, and, the more thorough it becomes, the more exceptions are discovered. Furthermore, the test just taken is a sample of eight questions from a larger test of thirty-five questions based on a variety of studies and observations (Donovan, 1983). The larger test has been tried on twenty-five individuals whose brain dominance was established in a lab situation, and there is a significant correlation (Budzynski). Since then, I have used this short version of the test in presentations, and it seems to be fairly accurate. I call it the Brain Preference Indicator with the emphasis on *indicator*. The best way to determine your preference and extent of your preference is to think how you think and behave. A series of slides helps one get a feeling for preference.

This series of slides shows a field of wildflowers and a carefully designed flower garden to indicate right and left visual preferences, respectively. Ads and cartoons demonstrate these differences.

A slide of William F. Buckley is shown and another type is revealed, the mixed dominant who might appear midway on the Brain Preference Indicator. He is a person who is handy with both sides of the brain. Mr. Buckley is articulate and logical but also musical and athletic. Although his politics are right, his business sense is left. The mixed dominant is fortunate in that both hemispheres are talented and both often have speech. This is a real advantage in cases of stroke or injury to one side of the brain, speech powers remain. The bad news is that these mixed-dominants often have trouble with stuttering in childhood and emotional moments later in life; the two hemispheres are trying to talk at the same time.

Left-handers are often mixed dominants because they must compensate for being minorities in a right-handed society. As a result, they develop skills which are not natural or easy for them (Levy, 1971).

It is an unsolved issue as to whether our culture is right-handed because it is left-brained or left-brained because it is right-handed. Brain research shows that the left-brain controls right body functions and vice versa. The fact is that our institutions and thinking are predominantly left-brained. Because you live in a left-brained world, you have plenty of experience with getting organized, being on time, and behaving rationally. Therefore, I am going to provide you with some *right-brained* experiences now.

*Two visual exercises follow. The first* features partial pictures in which students are asked to guess what the whole picture is. Then, the whole picture is shown on the screen and the following is said, as you look through these whole pictures, I want you to recall how you arrived at your answers. Did you analyze the partial picture and from that deduce the whole, or did you see the whole picture, or use some other strategy? Those of you who saw a flash of the whole picture are most

likely on the nine side of the scale. Those who analyzed the partial picture are probably on the left-brained side of the continuum.

*The second exercise involved drawing a picture shown upside down on the movie screen. This strategy helps the viewer see with the right brain rather than the left. Drawings are usually much better when done with right-brain viewing because the artist is not measuring, analyzing, and judging as occurs in left-brained viewing (Edwards, 1979).*

What are the implications of the split brain theory for Suggestology? There are two concepts developing in parallel and each supports the other. Suggestology demonstrates theory, and the split brain theory and research explain why Suggestology works so well.

I'd like to present the most salient parallels in these three phrases:

**A SHOTGUN IN EVERY CLASSROOM  
THE RIGHT IS ALWAYS WITH YOU  
ALL QUIET ON THE LEFT**

They sound a little like movie titles or yellow journalism headlines. And that is intentional, to pique one's curiosity, to arouse the visual imagery of the right brain, and to involve the left in figuring out the logic in them.

The first one probably is not that difficult to understand:

Since there are many degrees of left and right thinking styles in each classroom, why not take a shotgun approach to reach everyone in the class? Suggestology does this admirably. For example, S.A.L.T. techniques feature logical, informational lectures (left) presented in a dramatic, sensory way (right). There is rote learning with repetition and drill (left) with music and rhythm built in (right). There is verbalization and reading (left) coupled with relaxation and positive suggestion (right). By simultaneously engaging the right and left hemispheres in learning, Suggestology succeeds in holistic education. Also, there is something for everyone in Suggestology. Whether your learning style is right, left or mixed, Suggestology will reach you.

**THE RIGHT IS ALWAYS WITH YOU:** This is not some new religious incantation or advertising slogan for a movie. It simply means that your right brain is always exerting a strong influence upon you. Because the right is the mute hemisphere, we tend to ignore or downgrade its tremendous influence.

Brain research and therapy show clearly that the right is an everpresent, powerful force in your thinking and behavior. To have a good sense of how constant and strong the right hemisphere is, you need only understand what is characteristic of the right brain. It is playful, musical, fun-loving, emotional and about four years old. We know this is true through dichotic listening research,



i.e., is research in which two separate messages are sent to the brain, different ones to each hemisphere. The left-brain message sent through the right ear will impart some bit of information, something utterly fascinating such as "water is composed of two parts hydrogen and one part oxygen." Meanwhile, the right brain through the left ear is getting a message of a different nature. It hears a waterfall or ocean waves carrying a very comforting, reassuring emotional message such as: you learn easily, you love information about the composition of water.

To appreciate the infantile emotional level of the right brain, you need to know which phrase has been found by research to be most memorable, comforting and effective. It is: "Mommy and I are one (Adams, 1982)." Yes, fifty-two year old men, truck drivers, politicians and registered nurses--all prefer the message, "Mommy and I are one." It is not difficult to understand why the authoritative teacher and infantilization of the student are integral and effective in Suggestology.

If you keep in mind when communicating with others that half the brain is a preschooler, you can understand why positive, simple, playful, musical messages are so important in learning. These are the learning tools of the preschooler within all of us. Negative messages frighten the child away. Thus, the relaxing, amusing methods of Suggestology are so effective.

Voice inflection is another important factor in reaching the right brain. For all practical purposes, the left is tone deaf. Individuals who lose the language area of their right brains speak in a completely atonal way which makes it difficult for them to send emotional messages.

There is a story of a school teacher who lost the language portion of her right hemisphere and could not maintain order in the classroom because she could not express emotion in her voice. At home when she wanted to persuade her children that she really was upset, she prefaced her directions to wash the dishes with, "Dammit, I mean it." In other words, the right both sends and receives feeling content. Suggestology's dramatic sequences assure right-brained understanding. The visual appeal of Suggestology also increases right brain absorption. In short, many of Suggestology's unique features excite the latent talents of the right brain:

**ALL QUIET ON THE LEFT:** There are several features of Suggestology which quiet the left--the judgmental, punitive, critical part of you which can make life so difficult. For instance, recall a time when you were going to tell a joke you had just heard. It is a simple, funny joke, and it just fits the conversation ideally. But your left brain says: "Better think it over...be sure you've got the punch line...is it clean enough for this group?" Your right brain goes over the punch line, but left brain says: "That doesn't make sense." And so on until right brain is frightened to go on, and the moment is gone.



Suggestology offers several ways of circumventing the left brain's critical ways. Three are the altered state, visual imagery, and relaxation, and all three of them effectively bore the left brain so that the right brain can dominate.

Where is the altered state in Suggestology? The slow beat of baroque music and positive but repetitive message set the stage for a deeply relaxed state, joining the conscious and the subconscious. The left brain shuts down, and there is easy access to the right. Relaxation and guided imagery techniques used in Suggestology are both unappealing to the left and establish contact with the right.

It is interesting that these two areas of research, split brain theory and Suggestology, were born in different parts of the world but are running in parallel development and partnership, each complementing the other. It is exciting to anticipate how far they might go together.

#### PENSEZ A LA FACON DONT VOUS PENSEZ.

Depuis les années 50, les études de cerveau ont révélé les fonctions séparées et différentes des hémisphères cérébraux droit et gauche chez l'être humain. La parole est située dans l'hémisphère gauche ainsi que les dons de logique, la pensée séquentielle, l'organisation et les mathématiques. L'hémisphère droit est orienté vers les capacités visuelles-spatiales, la perception du tout, la perception sensorielle et les dons artistiques. La plupart des individus encouragent l'un ou l'autre et possèdent ainsi une dominance du cerveau droit ou gauche. Puisque les deux hémisphères perçoivent et traitent les choses différemment, il faudrait alors, afin de maximiser l'apprentissage de tous les étudiants, utiliser des méthodes multi-média.

Les méthodes traditionnelles sont destinées aux étudiants qui ont une dominance du cerveau gauche parce que l'information est présentée au moyen de cours magistraux, de lecture, de tests dans des périodes de temps organisées. Les élèves qui ont une dominance du cerveau droit apprennent mieux à travers le théâtre, la musique et des expériences tactiles dans un environnement affectif. La suggestologie seule fournit l'accès aux deux côtés du cerveau. C'est vraiment une méthodologie globale. Cet article analyse les composants de la suggestologie, et décrit leurs caractéristiques de cerveau droit et de cerveau gauche. Comprendre comment la suggestologie affecte le procédé de pensée offre des indications pour son succès, et peut faire jaillir des améliorations supplémentaires du système.

Darüber denken, wie Sie denken  
Seit den 50er Jahren gab die Forschung des Gehirns bekannt, daß die rechte und die linke menschlichen Gehirnhemisphären getrennte und verschiedene Funktionen haben. Die Sprache befindet sich in der linken Seite sowie die Fähigkeit für logisches, folgerechtes Denken, Organisation, und Mathematik. Die rechte Hemisphäre orientiert sich auf visuell-räumliche Fähigkeiten, Wahrnehmen des Ganzen, Sinnesbewußtsein und Kunstfertigkeit. Die meisten Individuen bevorzugen eine Hälfte oder

die andere, und haben daher eine dominante „Rechts-“ oder „Linksgehirnhemisphäre“ als biologische Eigenschaft. Da die zwei Hemisphären Gegenstände verschiedentlich wahrnehmen und begreifen, ergibt es sich, daß mehrfache Ausdrucksmitel verwendet werden sollen, um das Lernen aller Schüler bis auf Äußerste zu steigern. Traditionelle Unterrichtsmethoden sind für Linksgehirnschüler geeignet, weil die Information durch Vorträge, Lesen und Prüfen in organisierten Zeitspannen darbegoten wird. Schüler, die eine Bevorzugung des Rechtsgehirns vorweisen, lernen am besten durch dramatische, musikalische und fühlbare Erfahrungen in einer gefühlvollen Umgebung. Als einzigartige Lehrmethode besorgte Suggestologie für Zutritt zu beiden Seiten des Gehirns. Sie ist tatsächlich eine „Vollgehirnmethode.“ Diese Abhandlung analysiert die Bestandteile der Suggestologie und beschreibt die Rechts- und Linksgehirneigenschaften dieser Bestandteile. Ein Verständnis für die Art und Weise, wie Suggestologie den Gedankenprozeß beeinflusst, kann den Schlüssel zu ihrem Erfolg bieten, und wird vielleicht zur weiteren Verfeinerungen des Systems führen.

#### PIENSE EN COMO PIENSA

Las investigaciones acerca del cerebro, a partir de la década de los años cincuenta, han revelado que el hemisferio derecho y el hemisferio izquierdo del cerebro humano tienen funciones diferentes y separadas. El habla se localiza en el hemisferio izquierdo al igual que la habilidad para pensar lógica y consecutivamente, para organizar y para las matemáticas. En el hemisferio derecho se localiza la habilidad visual y espacial, la percepción, los sentidos y el talento artístico. La mayoría de las personas permiten que uno de los dos hemisferios domine y por lo tanto en ellos predomina el hemisferio derecho o izquierdo.

Ya que ambos hemisferios perciben y asimilan en forma diferente, naturalmente, para que el estudiante aprenda al máximo se deben utilizar múltiples medios.

Los sistemas de enseñanza tradicionales tienden a beneficiar al estudiante en quien predomina el hemisferio izquierdo ya que la información es presentada por medio de conferencias, lectura, y exámenes a completarse en cierto período de tiempo. Los estudiantes en quienes predomina el hemisferio derecho aprenden mejor a través de experiencias dramáticas, musicales, y táctiles y en un medio ambiente afectivo.

En forma única, la Sugestología provee acceso a ambos hemisferios del cerebro. Es verdaderamente una metodología "whole-brained".

Este artículo analiza los componentes de la Sugestología y describe las características del hemisferio derecho y del hemisferio izquierdo.

El conocimiento de como la Sugestología afecta el proceso de pensar ofrece indicios para su éxito y puede producir mejoras en el sistema.

## **Salt Via Media\***

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### **Abstract**

By developing media-based instruction, SALT can be applied more widely in public schools. The author developed a spelling and vocabulary course for office administration students. The suggestopedic-type lessons are on audio cassette coordinated with a text-workbook so that a teacher with limited SALT background can teach the course. Compromises are required if suggestopedic instruction is to be offered to large numbers of students in various kinds of public schools.

We have at least a billion neurons up here capable of enabling us to learn up to 1,000 bits of information per second from birth until about age 75, at which time some decline may begin. All of us underutilize that potential. SALT consists of teaching techniques enabling learners to tap more of this enormous potential. In addition to the speedup of learning, retention of data is increased. SALT is also relaxing, enjoyable, and stress-free.

The scientific basis for SALT is brain-mind-biology research of the past 25 years. California Institute of Technology psychobiologist Dr. Roger Sperry was awarded the Nobel Prize in October 1981 for studies dealing with the left and right hemispheres of the brain. At the time of the award, he spoke of vast "educational implications" of these findings. Dr. Georgi Lozanov, a Bulgarian psychiatrist turned educator, has been researching and developing educational applications relevant to these findings for over twenty years.

Donald Schuster of Iowa State University was probably the first American academic to introduce seriously Lozanov's method in the United States. Lozanov Learning Institutes are proprietary schools specializing in these teaching techniques. Other prominent terms in the field of accelerating learning are "confluent education," Optimal learning from the Barzak Institute, Learning in New Dimensions (LIND), and Superlearning.

\*Paper presented at the 1982 SALT Conference April 28-30, 1982.

## Components of the Lozanov Method

*Teacher Characteristics.* A teacher who is authoritative, has an air of expertise, and inspires respect and trust--yet is also warm, friendly, and above all, supportive. The "Lozanov teacher" has had extensive training in use of the techniques.

*Class.* 12 to 15 students; 3- to 4-hour sessions.

*Environment.* Comfortable, attractive colorful room--including such amenities as art work, plants, and flowers--furnished with upholstered chairs.

*Instructional Materials.* Specially prepared books for each subject and tapes or records of classical music, which are used for all courses.

*Foundations.* Use of devices that activate left and right hemispheres of the brain. Application of theory of suggestion as expounded by Dr. Lozanov and amplified and interpreted by others. In brief, applying suggestion to learning means intentionally choosing and then orchestrating those stimuli that will result in maximum learning.

With these basic components, the teacher sets the minds of the students for success and for a good, pleasant learning experience. Various relaxation, visualization, and breathing exercises are part of each carefully orchestrated class. Games and songs related to the subject are also likely to be included. Artfully prepared delivery of the new materials is called the "active presentation"; the same material repeated with baroque music is the "passive presentation." The "passive" is followed by a creatively designed practice of the material just presented. Sprinkled throughout are subtle positive suggestions, music, art, color, drama, humor, and even a bit of foolishness. The Greek poet and philosopher Horace suggested "Mix a bit of foolishness with your most serious plans. It is lovely to be silly at the right moment." With these techniques, it is hoped the students will learn in the natural way of the very young child--infantilization of learning.

### Implementation of SALT Techniques

When I received a Vocational Education Act grant from the federal government to study the method and implement it in a community college office administration course, the problems were quickly apparent. My colleagues and I could *not* teach a four-hour class of 12 to 15 students in a colorful and artistically decorated room with upholstered chairs. Neither could we all carry a tune or perform like professionally trained actors and obtain extensive and expensive teacher training. We certainly couldn't design suggestopedic course materials for each of our courses, print these books, and distribute them to our students.

For the purpose of this grant, I had to develop course materials that could be used by traditionally trained teachers with no prior SALT

background. The only requirements would be enthusiasm about trying a method new to them, willingness to read the teacher's manual for the course and attend a brief experiential workshop for the specific course. An interested but suggestopedically untrained teacher must be able to teach the course that I would develop using the grant funds. The students might not achieve the vast acceleration and retention rate reported in the research and possible for adults enrolled in private schools and certain university situations. The goal, however, would be to have better results than we are getting now.

By presenting specific realistic applications to the public school sector, I also hoped the course I developed might be a prototype. If SALT techniques are to be available to large numbers of students, then variations from the pure or classical Lozanov methods are required. Possibly if the philosophy is absorbed and all feasible aspects are retained, then we can help more students learn more than has been possible in the past.

For those reasons, I chose a media-based learning system, i.e., classroom instruction on audio tapes coordinated with a workbook. Although aware of the advantages of videotape or slide/tape presentation, I proceeded with audio cassette-workbook design because of the ubiquitousness of cassette players and headsets. With the cassette-based course, there are several options:

1. A course for homebound students—probably not as successful as with a teacher but superior to a traditional correspondence or TV course.

2. A self-paced course in a learning lab with a teacher who counsels, motivates, and praises on an individual basis.

3. A traditional classroom with a teacher who plays the cassettes but personalizes them by stopping for teacher and student comments and responses.

4. A traditional classroom with a teacher who has learned to present the class live after listening to selected portions of the cassettes and then adding personal touches to the live presentation. The tapes are used for make-up work.

For a classroom test, I chose Option 3 as the major means of instruction. In addition to stopping the tape for teacher and student comments, I spoke with students on arrival and departure and during my office hours. I added individualized notes and stick drawings to returned papers. Several times the "practice" part of the session was a nonthreatening team game or contest instead of the cassette-workbook practice exercise.

Options 2, 3, and 4 are helpful to today's nontraditional community college students and to high school and occupational center students. Many of these students have attendance and promptness problems,



English as a second language, literacy deficiencies, and basic learning difficulties. The advantages of being able either to make up missed instruction or to repeat it are apparent. If these nontraditional students are not able to make up or repeat, success is unlikely with the most ideally prepared instruction. In-house self-paced SALT courses for business and government office workers can also become a reality.

*Superlearning RSVP: Relaxation, Spelling, Vocabulary, Pronunciation* is the title of the 30-lesson cassette-workbook course I produced. About 1,000 words that office workers should know how to spell, say, and understand are included in *RSVP*.

The first two lessons introduce superlearning as related to the objectives of the course. Each lesson is about 45 minutes long, designed for the 50-minute class period.

The format of the class was as follows:

Introductory music.

Instructions for quiz on previous day's lesson are on cassette; printed materials are duplicated and distributed from camera ready copy.

Active presentation of today's words on tape while students see the words printed in their attractive workbooks and write them in the blanks. This presentation includes stories, memory devices, and miscellaneous information about the words, which are usually included in sentences. Cartoon-type art is interspersed throughout the book. Rules are minimized or eliminated. Students are actively working in their books while listening to this portion of the tape.

Passive presentation of same words along with baroque music; students are instructed to listen to the concert with eyes and books closed; the suggestion is made that the words will be absorbed. Right hemisphere of the brain is activated by the music and the rhythm of the narration.

Practice quiz and answers (tape-book coordinated) leaves students with good feeling of accomplishment.

Instructions on tape and in book to look the words over for a few minutes just before falling asleep and again first thing in the morning. During closing music, for an added touch of whimsy, the last words at the end of each tape and workbook lesson are "goodby" in a different language.

Arriving the first day of class, the students were noticeably surprised to hear music as they entered and to receive a gift-wrapped textbook. Produced with a grant, it could not be sold in the bookstore. Clearly this would be a totally different kind of class from previous experiences. The music and the gift-wrapped textbook were the beginning of the ongoing attempt to provide positive suggestions about being in a classroom and about learning.



## Student Demographics

For the first classroom test of the materials, I had 30 students. The class met for nine weeks on Monday through Thursday from 12:00 to 12:50. The all female group, not unusual in office administration courses, ranged in age from 18 to mid-50s. Among the 30 students were 12 CETA students (Comprehensive Education and Training Act). Most were high school dropouts, and several were junior high dropouts. Poverty, a requirement for acceptance in the program, and history of school failure were universal. Most lived alone with one or more babies, resulting in a life style that makes learning difficult.

The other 18 students included 5 recent emigres from non-English speaking countries and the usual mix of California community college students. California community colleges have no academic entrance requirements and are free to residents. As a result, a course with no prerequisite includes many students with poor academic history and limited literacy, students with satisfactory records, and a few excellent students.

## Pre- and Post-Test Results

*During the first class period, I dictated a 50-word spelling pretest, the words randomly selected from 500 that would be presented for spelling, pronunciation, and meaning during ten class periods. The 500 words are nontechnical and commonly used in office work, such as *recommend, accommodation, receive, procedure, relevant*. The number correct out of 50 ranged from 2 to 43 with a median of 16. Ten 50-minute S.A.L.T. classes followed with no homework assigned other than "look the words over for 2 or 3 minutes before going to sleep and upon arising."*

On the eleventh day, a posttest was given, again on 50 words randomly selected from the 500 that had been learned. This time the scores ranged from 10 to 49 correctly spelled words, with the median at 32. The improvement over the pretest scores ranged from 2 percent to 1000 percent and averaged 146 percent.

Following the ten lessons focusing on spelling, we studied meanings of computer, word processing, banking, finance, and general business terms; pronunciation of frequently mispronounced words; word division; and other basic language skills expected of office workers.

At the end of the nine-week course, posttests on the various language skills were given. Results are not included here because the time shortage precluded giving pretests that would provide a significant basis for comparison with the posttests.

At the end of the nine weeks, however, another 50-word spelling

test, based on the 500 words taught during the first ten days, was given. As the students had not seen the original pretest after submitting it the first day, I dictated these same words on the last day in order to test retention. This time the scores ranged from 18 to 49 correctly spelled words, with the median at 30. The percentage of improvement over the first day pretest ranged from 4 to 1600 percent, with a mean of 151 percent.

### Evaluation

The obvious limitation to this study is that neither a control group nor a comparison with previous classes was possible. I believe that the results are nevertheless noteworthy because 25 of the 30 adults (the emigres excluded) had been exposed to most of these words for many years in and out of the classroom. In view of that consideration, enormous improvement was shown after just ten 50-minute periods. Although only spelling was pre- and post-tested, pronunciation, meanings, usage, and learning skills were included in those ten periods of instruction. It is reasonable to expect that they improved in those areas, as well as in the spelling.

Based on private conversations with many of the American-born students and those who emigrated as children, most started the course with poor self-concepts of their ability to spell, of their vocabulary, and of their likelihood to improve because they had "never been good at it." The limited English-speaking emigres tended to have more confidence in their ability to learn, but they came to class understandably frightened by what they conceived as the challenge of competing with American educated students.

Three of the CETA students attended the class and took the required tests but did not participate in the learning activities I provided. In spite of their apparent lack of interest, their scores showed improvement in spelling and vocabulary.

One of the unusual items emerging from the study is that the same number of students took the final examination as took the first day pretest. Although a few students arrived in class after the first day, the same number dropped during the semester for personal reasons which they explained to me. Starting with 30 and ending with 30 is a rare occurrence in a no-tuition, no-prerequisite, nontransferable community college course. A high attrition rate is common.

Anonymous student evaluations were mostly but not all favorable and included three comments like "Why can't all classes be like this:" and one comment from a student who was happy to have lost weight as a result, she believed, of the daily relaxation session. (Elimination of stress-related health problems is not unusual according

to studies of Lozanov and others.)

## Conclusion

In addition to extensive reading and training for suggestopedic teachers, special teaching materials are required. For SALT techniques to be widely used, therefore, teaching materials are needed for a variety of subjects and grade levels. It is not economically feasible to produce course material in the public sector for just one or a few teachers. If a course can be developed and marketed like any other commercially prepared instructional material, SALT techniques have a chance of being disseminated.

Several SALT practitioners have predicted that the suggestopedic style of learning will become prevalent within a few years. For this to happen, I believe compromise is required. SALT via media is an important form of compromise: A media course can be used by a teacher with minimal or no suggestopedic training except study of the teacher's manual and participation in an experimental workshop, both designed for the particular course. The spectacular results accomplished by classical suggestopedic means are not likely to be achieved, but we probably can achieve more in the classroom with some SALT than with none at all.

### SALT ET LES MEDIA

Rapport présenté à la conférence SALT de 1982, les 28, 29 et 30 avril 1982.

En développant l'enseignement par les media, SALT peut être utilisé sur une plus grande échelle dans les écoles publiques. L'auteur a développé un cours d'orthographe et de vocabulaire pour les étudiants d'administration. Les leçons suggestopédiques type sont sur radio-cassette en coordination avec un livre de texte pour que l'enseignant peu habitué à la méthode SALT puisse enseigner le cours. On doit consentir à un compromis si l'enseignement suggestopédique doit être dispensé à un grand nombre d'étudiants dans de nombreuses écoles publiques différentes.

### S.A.L.T. durch Ausdrucksmittel

Wenn ausdrucksmittelbasierter Unterricht entwickelt wird, wird S.A.L.T. dann weitere Verwendung in den Schulen finden. Die Autorin entwickelte einen Rechtschreibungs- und Wortschatzkursus für Studenten administrativer Ausbildung. Die suggestopädieartigen Schulaufgaben sind auf Audiokassetten aufgenommen, und sind mit einem Arbeitsbuch koordiniert. Damit wird es dem Lehrer, welcher eine begrenzte Erfahrung mit S.A.L.T. besitzt, ermöglicht, diesen Kursus zu unterrichten. Wenn suggestopädischer Unterricht großen Mengen von Schülern in verschiedenen Arten von Schulen angeboten werden soll, werden Kompromisse verlangt werden.

#### SALT VIA OTROS MEDIOS

SALT podría aplicarse extensivamente en las escuelas públicas si se desarrollan métodos de instrucción via otros medios. El autor desarrolló un curso de vocabulario y ortografía para estudiantes de administración de oficina. Las clases sugestopedicas han sido grabadas en cintas magnetofónicas, las cuales están coordinadas con un libro de texto, de manera que un maestro con poca experiencia en la metodología de SALT pueda enseñar el curso. Habrá que hacer concesiones si la enseñanza sugestopedica se va a ofrecer a muchísimos estudiantes en varios tipos de escuelas.

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Changing Personal History:  
A Technique to Accelerate Learning

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Abstract

Frank's conceptualization of therapy as morale building is used to explain the effectiveness of Bandler and Grinder's "changing personal history" technique. A case study of a fourth-year high-school student is given, indicating how this technique may be used to improve the learning of mathematics as measured by examination marks. Emphasis is placed upon the importance of outcomes, rather than upon theories purporting to explain those outcomes, and upon the short period of time, 50 minutes, required to produce the striking improvement described in the case study.

Introduction

In a previous article (Stanton, 1982), I described the problem of a high-school student with learning difficulties which was conceptualized as a case of "demoralization." This term, coined by Frank (1972), describes that state "...when a person is unable to cope with a life situation which he and those about him expect him to be able to handle." The student, Bobby Graham, overcame his learning problem through a restoration of morale in that he developed confidence in his ability to learn. A technique involving relaxation, positive suggestion and imagery was the means to this desirable end. The present article again uses Frank's conceptual framework, although a different technique is employed to promote learning.

Technique is one of the four elements common to all successful therapy (Torrey, 1972). The others are a shared world view, certain personal qualities of the therapist, and the mobilizing of the patient's belief that he or she will return to health as a result of the technique used. In the previous article, I described how Bobby Graham shared his teacher's world view that his learning difficulties were due to his "demoralization." Once his problem was labelled in this way, Bobby felt less anxious. His anxiety and sense of failure decreased further because his teacher accepted him as he was and demonstrated his ability to see Bobby's problem through Bobby's eyes. The rapport between student and teacher enabled generation of a mutual belief that use of the relaxation, suggestion, imagery technique (RSI) would provide a solution to Bobby's learning difficulties. This it did.

These four elements again play an important part in the case study to be reported in this article. This is inevitable, really, for they lie at the heart of any successful therapeutic or teaching intervention. However, the main emphasis in this article will fall upon the particular technique used. It is one which has something in common with RSI but is, in other ways, quite different.

## Changing Personal History

As developed by Bandler and Grinder (1979), changing personal history involves the patient in finding some resource, such as confidence, relaxation, or assertiveness, which he or she did not have at a particular time when he or she coped badly with some situation. This is then "taken back" to change that situation and the negative feelings associated with it. In detail, the procedure is as follows.

Firstly, the patient identifies the response he or she wants to change. Once he or she has done so, the patient closes his or her eyes and attempts to "enter into" the situation in which this maladaptive response was used. For example, a person might continually react with aggression to quite innocent comments, believing their intent was critical. As the patient experiences the unpleasant feelings which are part of this situation, he or she usually displays changes in breathing pattern and facial appearance. When the therapist observes these changes and/or the patient says he or she is feeling the unpleasant sensations, he "anchors" the negative state, usually by a touch. A repetition of this particular touch (for example, on the right knee) recreates the negative experience.

Secondly, the patient explores his or her experience to discover a positive resource which he or she now possesses, one capable of changing the original unpleasant situation to produce a more acceptable outcome. In the example used earlier, perhaps the patient might now be more self-accepting, less sensitive to the words of others. If one should be unable to find such a resource an alternative is to imagine how an admired person would handle the situation and to "see" oneself acting in this way. That competent behavior is used as the resource and, as the patient's words or facial and breathing changes indicate his or her experiencing of the positive feelings associated with the resource, the therapist "anchors" it with a different touch (for example, on the left knee).

Finally, the therapist touches the first "anchor" (right knee) to bring the patient into the unpleasant situation and then triggers the second "anchor" (left knee) to bring in the resource. The patient sits quietly with eyes closed until he or she experiences himself or herself responding in a new way to the previously unpleasant situation. This new response is then generalized to any future situation similar to that in which the patient previously responded badly, by the therapist saying: "Anytime you encounter anything similar to your previous unpleasant experience you will feel 'this' (touching resource anchor)."

I have adapted this technique of Bandler and Grinder's to help students handle their school work more effectively. The case of June Daly will illustrate how it works.

### June - A Case Study

Like so many high-school students, June, a fourth former, seemed to have some sort of block about mathematics. When she came to me for help with this problem it was late in the school year, just after she had received her second term marks. For mathematics, she received 26%. This was worse than her previous term's mark of 35%, but it was in keeping with her record of previous years.

Naturally, her confidence in coping with mathematics was very low. On a 10-point scale with 0 = "I have absolutely no confidence in learning mathematics," and 10 = "I have complete confidence in learning mathematics," she scored herself 2. In Frank's terms, she was demoralized. His treatment for such a situation is the rebuilding of morale. This I attempted to achieve with June.

Basically, my approach was to help her believe in the power of particular technique we would be using to improve her learning of mathematics. To this end, I showed my understanding of her feelings of failure about mathematics, pointed out how many others felt similarly, and then went on to tell her stories about how some of these others had found that the "changing of history" technique solved their problems. Stories are powerful vehicles of change in that the suggestions for improvement they carry are indirect, influencing the subconscious rather than the conscious mind.

The suggestive power of stories can be enhanced through the quotes which may function as embedded commands (Grinder et al., 1977). To illustrate, during one story I had a girl's mother say to her: "Now, Judy, you will enjoy learning mathematics," and in another, one girl said to another, "Whatever has happened, you certainly enjoy mathematics now! The emphasized words were stressed tonally, as were a number of other disguised commands directed towards changing June's attitude to, and facility in, mathematics.

I explained carefully to June exactly what the "changing personal history" technique was and what each step aimed to achieve. In this way, I removed any fear of the unknown, any apprehension which may have interfered with her belief in its "curative" powers. Further, she liked the idea of using her own resources, her own power to change from her Present State that of failing at mathematics, to her Desired State, that of succeeding in learning mathematics.

June relaxed in her chair, letting go any remaining tension by concentrating on her own breathing rhythm, and closed her eyes. She then imagined the situation she wanted to change, her fear and worry about mathematics. Thus, she "saw" herself faced with a mathematics problem, unable to do it, becoming upset and miserable. As she experienced these unpleasant feelings, I touched her right elbow to "anchor" them. She described these feelings as "horrible" and continued to feel them for several minutes.

After June opened her eyes, we chatted for a few moments and while doing so, I again touched her "horrible" anchor to test whether it would recreate the unpleasant feelings. It did. Then June closed her eyes and thought about a situation which she had handled in a confident, competent and mature way. We had explored this earlier and she had remembered an incident in which she had looked after her little brother at the beach. He had got into trouble in the waves and June had run into the water, helped him out, and pacified him until her parents, who had been walking further up the beach, arrived. June was proud of the way in which she remained calm while acting decisively and quickly. She thought about this incident and, as she experienced the positive feelings associated with it, I touched her right elbow. A little later, when she opened her eyes, I tested that this "anchor" would recreate these feelings which she labelled "warm."

So we put the two feeling states together. As June again relaxed with eyes closed, I touched her right wrist to bring back the negative feelings of the mathematics situation. Once her face and breathing indicated she was experiencing these, I touched the right elbow to re-create the "warm" feelings. She sat quietly for over 10 minutes, then opened her eyes when she felt the "horrible" feelings had gone. A test of her right wrist "anchor" confirmed that they were no longer there.

At this point I asked June where on the "Confidence in Learning Mathematics Scale" she would now place herself. Somewhere between 5 and 6 was her answer, a considerable improvement over the pre-treatment score of 1. Still, this is a subjective measure which might be quite unrelated to any actual improvement in June's learning of mathematics. I had to wait several months, in fact, before more objective evidence for an improvement was forthcoming. After her Term 3 examinations, June telephoned me, highly jubilant. Her mathematics mark was 67%, the highest she had ever received. In addition, she had improved her marks in every other subject, a side effect which did not really come as a great surprise to me. When a patient's confidence increases in one area, the gains usually generalize widely.

#### Discussion

The session with June occupied about 50 minutes. That was the full extent of the time I spent with her. Yet, that short session enabled her to gain increased confidence in her ability to learn mathematics, a confidence which was translated into her best-ever mark in that subject. This gain was achieved not through remedial work in mathematics, but through a technique designed to change her personal history, her failure feelings about the subject.

June's is not an isolated case. I have used this technique with seventeen other high school and university students who were experiencing difficulties with their studies. In only two cases was there no improvement. Seven of these students recorded improvement as startling as that of June, while eight showed more moderate gains.

How does the "changing personal history" work? Though I could speculate on the tapping of unconscious powers, I really do not know. I can advance no theory to explain the success other than to return to Frank's conceptualization of therapy's being a restoration of morale. By helping a person feel confidence in his or her ability to succeed at a particular task, one provides the opportunity for growth.

In many of their writings, Bandler and Grinder use the term, "the map is not the territory." In cartography, the blue patch on the map may represent a lake. It is not a lake, however, it is a symbol of the lake. Other symbols represent other features, but they are not those features. Similarly, as we grow up, we make a map of the world; the way it works. But this is a map, our representation of the world. It is not the world as it actually is. In June's map, learning mathematics was virtually impossible. This is what she believed, but it was a belief, not a fact of life. Through the "changing personal history" technique, she was able to change her map of the world. Something that was previously impossible apparently became possible in this new map.



Bandler and Grinder have also remarked (1979) that "it is all lies." By this, they mean all our elaborate theories, models and hypotheses are lies which we invent to explain why things are the way they are. Their advice is for us to find those lies that work for us and to reject the others. Thus, though we might find it difficult to explain "scientifically" why the "changing personal history" approach produces the effect it does, this does not, perhaps, matter too much. What is really important is that it works. It produces the desired outcome. It helps students learn more effectively, if learning can be defined in terms of marks recorded in an examination.

I have reservations about using examination marks as a measure of learning, but perhaps it is the best objective one we have. Rather, it enables them to use their own powers to move from an unsatisfactory Present State to a Desired State. Can we ask for more?

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CHANGEMENT D'HISTOIRE PERSONNELLE: UNE TECHNIQUE POUR ACCÉLÉRER L'APPRENTISSAGE. On utilise le concept Frank (celui de la thérapie pour affermir le moral) afin d'expliquer l'efficacité de la technique de Bandler et de Grinder pour changer l'histoire personnelle du sujet. On présente le cas d'un étudiant de première afin de démontrer comment cette technique pourrait s'employer pour améliorer l'apprentissage des mathématiques, tel que mesuré par les notes des examens. On insiste surtout sur l'importance des résultats plutôt que sur les théories qui expliquent ces résultats. On souligne aussi la courte période de temps (50 minutes) dont on a besoin pour produire l'amélioration remarquable qu'on décrit dans le cas de cet étudiant.

DIE ÄNDERUNG DES LEBENSLAUFS: EINE LERNBEFÖRDERUNGSTECHNIK. Die von Frank konzipierte Idee der moralisch stützenden Therapie, wird angewandt, um Bandler's und Grinders Effektivität über die Technik der Änderung-des-Lebenslaufs zu erklären. Der Versuchsfall mit einem Schüler im vierten Jahr der Sekundarschule zeigt, wie diese Technik angewandt werden kann, um das durch Prüfungsergebnisse bemessene Mathematiklernen zu verbessern. Das Gewicht wird auf die Wichtigkeit der Ergebnisse anstatt auf Theorien gelegt, die vorgeben, diese Ergebnisse zu erklären, und auf die Wichtigkeit der kurzen Zeitspanne, 50 Minuten, die erforderlich war, um die auffallende, in dieser Studie beschriebene Verbesserung hervorzubringen.

CAMBIANDO LA HISTORIA PARTICULAR: UNA TÉCNICA QUE ACELERAR EL APRENDIZAJE. La conceptualización de Frank de la



terapia como fundamento moral, es usado para explicar la efectividad de la técnica de Bandler y Grinder, cambiando la historia particular. Un estudio sobre un caso de un estudiante del cuarto año en escuela superior es dado para mejorar el aprendizaje de las matemáticas, mediante las notas en los exámenes. El énfasis se coloca en la importancia de las consecuencias, más que en las teorías pretendidas, con el propósito de explicar aquellas consecuencias y sobre el periodo corto de 50 minutos, requerido para producir el mejoramiento notable descrito en este estudio.

## Language and the Brain

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### Abstract

The processing of sensory information, for example in reading and writing, depends on which stage of development the brain has reached: only one active half, symmetrical activity or asymmetrical activity. For good reading from left to right, the span of apprehension has to be to the right of the focusing point. A right-brain reader has the span to the left, and therefore reading is easiest from right to left. Turning the text upside down is an easy way to get the letters in the correct order for a right-brain reader. When brain activity is symmetrical, reading and learning the text are improved. A similar finding goes for writing. Amazing improvements in reading ability have been achieved.

### Why Some Read Inverted Text Better

Let us look a little closer at the pupil as a receiver of direct and indirect perception. Direct perception means that the individual himself is "here and now," indirect perception means that the individual can assimilate what others have experienced through pictures, symbols and in the form of coded, social arrangement we call "our language."

It has long been known that we have a double brain, i.e., two brain halves which each process their own working material in different ways. By means of the corpus callosum, the two halves work together normally in adults so intimately that it has not been until recently that new techniques and knowledge have made it possible for us to understand the double nature of the brain. We are, however, just starting to learn about the brain even though mankind has pondered throughout the ages and tried to describe the dual nature of our existence.

It is commonly believed today that one half of the brain processes simultaneously the direct situation and is the seat for feelings, body consciousness and orientation "here and now," whereas the other half processes sequentially direct impressions and is the seat for manipulations using language and symbols as working tools regardless of the present situation. Normally it is the right half of the brain which functions in a simultaneous manner and is responsible for the fact that the "body" can automatically drive a car while the left half of the brain functions in a sequential manner and can talk about something completely different while one drives. Both halves of the brain look after their own department without interfering with each other. The unified nature of action and conception means that we can be influenced by means of sequential verbal instruction of the half of the brain responsible for conception, (ideas, etc.--someone else's or one's own); and at the same time act correctly at any instant of time without any conscious effort. There has been no lack of suggestions as to the best way of describing the relationship between the two halves of the brain. Fig. 1

shows the brain halves with a few of the aforementioned specialities, and corpus callosum as the interconnection.

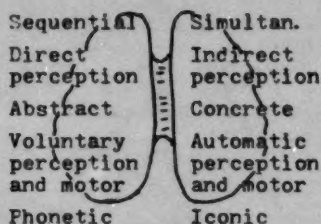


Fig. 1

Figs. 2, 3 and 4 show schematically three of the developmental stages leading to the division of the functions of the brain halves (referring to right-handed people).



Fig. 2: The child is controlled by direct perception and acts on reflex. Proof that the right half of the brain is the most active of the two is evident from the fact that the child concentrates on the left field of experience. In the first months, children move the left hand more than the right, and turn the face to the right to enable sounds and objects to enter the left field of experience. As long as the child is at this stage (early infancy), a row of dots, for instance, will be drawn as a continuous line, and words and lines will be written from right to left. This type of behaviour, which is controlled by need, can be seen for many years. For instance, the child gathers articles together (sets the table, etc.) for its immediate need but only on encouragement will tidy up (clear the table) with an eye to the future (i.e., that the china is clean and the food has not gone off the next time it is time to eat). Acts of will are disturbed by reflexes. A nine-month-old baby will, but cannot, give things away since the pressure of the object in the hand produces a grip reflex which the child is unable to overcome just now. The child expresses himself by interpreting tonal variations, mime and body language, which reflect life-long the individual's state of mind.

As long as the individual remains at this "gestalt level" and does not see sequentially, he/she can, even as someone who is controlled by need, think spacially about areas to the left and consequently draw from right to left. The process of reading is best from right to left because the right half of the brain accounts for the visual sensorimotor. This results in the pupil's reading without any difficulty text held upside down whereby the direction of reading is from right to left.

Fig. 3: In the case of a symmetrical brain function, the child is dependent upon both halves of the brain, which have now started to work together via the corpus callosum. If the right half is activated, e.g., if the child is engaged emotionally, if the information source is to the left or if the child points with his left index finger, he may start to feel more with his hands than listen, and start to work (play) from right to left. If the child is calm and secure, if the information source is to the right, etc., the child can benefit more from instruction and work (play) from left to right.

The symmetrical function level means that both halves of the brain need to be utilized to solve intended tasks which involve so-called "co-movements." Both hands move in the same manner, hold the mug. The eyes need the use of both halves of the brain to follow a movement. Most of all, the child cannot do what he wants and at the same time converse with someone, since speech requires the left half of the brain to be engaged with the speech motor.

Fig. 4: At the asymmetrical level the processes occur in each half of the brain separately. All everyday activities "here now" and can be carried out when the individual thinks and speaks at the same time about something which does not have anything to do with the "here and now" situation. The individual is not influenced by reflexes or co-movements, but instead goes preferably in one direction (right), i.e., interprets touch, visual and auditory influences in the right field and functions on the whole sensori-motor with the left half of the brain. Only in new, intentional situations do these co-movements return. "Keep your tongue in" say those who look on when one tries to hammer in a nail. During the process of hammering, and similarly in the first year's instruction in reading and writing, the tongue wants to move as well; an indication that the eyes and writing movements cannot be controlled without the help of both halves of the brain. This is how it ought to be, if we, using the left half of the brain, should look after the will-motor and assess in relation to will, what we see, hear and feel, i.e., with the material in the right field of experience. But is it this way? (See Fig. 5.)

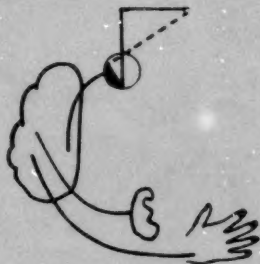


Fig. 5

Roger Sperry, the Nobel Prize winner in medicine in 1981, performed tests on patients who had had their corpus callosum cut out in the hope of curing serious cases of epilepsy. His tests showed the following:

The patient with a split brain can say what he holds in his right hand, which is quite natural since the right hand is linked to the left

half of the brain, the half responsible for speech. The patient also knows that he is holding something in his left hand if he is not holding something in his right hand at the same time. But if, holding an object in his left hand, he touches an object with his right, he now says that he is no longer holding an object in his left hand. Information from the left-brain-half's "own" hand, the right one, cuts off the information. Conflicting messages accordingly cause the contralateral connection to function and the ipsilateral one to be closed off. With touch, each half of the brain interprets its own field of experience and inhibits that of the other. (See Figs. 6-8.)

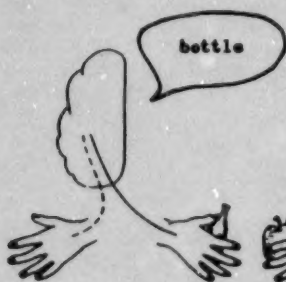


Fig. 6

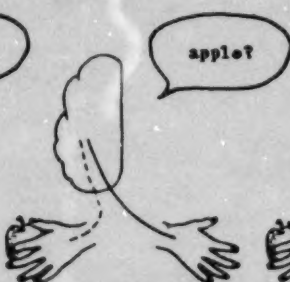


Fig. 7

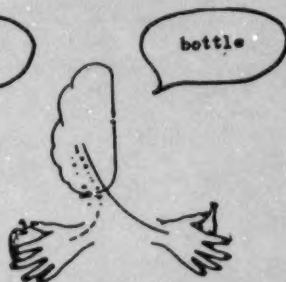


Fig. 8

The same principle applies to hearing. The patient can hear what is said in one ear if nothing else is heard in the other. If someone whispers something in the right ear of a split-brain patient, the patient naturally hears what is said, since the right ear is linked to the speaking left half of the brain. But even if someone whispers in the patient's left ear he can repeat what was said. But if two different messages are given at the same time in different ears, the patient says that he can only hear what was said in the right. (See Figures 9-11.)

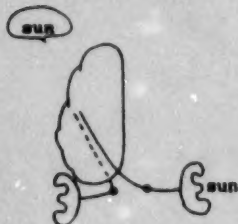


Fig. 9

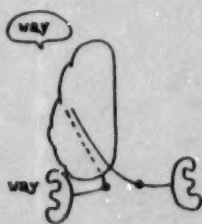


Fig. 10

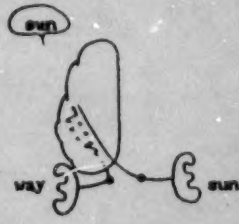


Fig. 11

In the case of strabism vs. cross-eyedness, the reasoning just detailed can be considered to be analogous to touch and hearing. The ipsilateral link is shut off when the brain receives different messages, and the depth of field which is based on the disparity of both eyes (somewhat different angles of vision) disappears and the picture becomes flat. The left half of the brain shuts off the link to the right eye, i.e., the patient sees the right field of vision with his right eye.

Consequently, with perfect sight in both eyes, when the right eye concentrates on an object, it is the left half of the brain which sees and vice versa, i.e., the half of the brain which squints, changes. (See Figs. 12 and 13.)

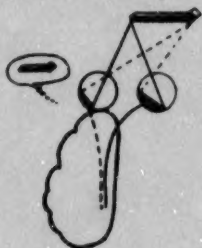


Fig. 12



Fig. 13

But we who have not had our corpus callosum cut out, function with two linked brain halves, i.e., when one half has seen, heard or touched something the other half experiences the same simultaneously. (See Figs. 14-16.)

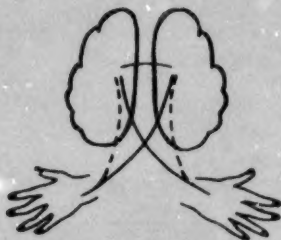


Fig. 14

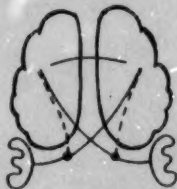


Fig. 15



Fig. 16

With regards to the sensory system, we can say that through passive perception we receive a symmetric brain function. The difference between the sensory and motor systems for vision, hearing and touch organs can now be described.

With respect to the motor system, we can say that through intended active movements, we get an asymmetric brain function, which is necessary if we are to be influenced in an understandable manner, i.e., speak, read, write and think. (See Figs. 17-19.)

H. C. Andersen could tell sagas and Winston Churchill could give speeches to the nation, but neither of them could read or write. There are many examples which point towards a deciding difference between speech and writing, despite the fact that both cases represent the transfer of coded information from one person to another.

With speech, the following conditions are always satisfied, but not always with reading:





Fig. 17

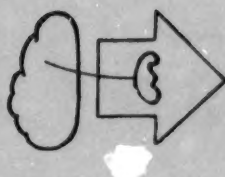


Fig. 18

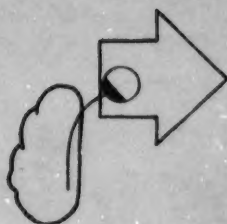


Fig. 19

1. We must know beforehand what we are going to say. The outcome of quiet thought is the actual speech.
2. We must receive feedback information all the time from our own voice and/or the movement of the lips, which tells us how far we have come with the process of speaking.
3. That which has already been said must be extinguished little by little so that it does not disturb the process.

Fig. 20 shows that regardless of which level the individual is in his development, speech provides an unequivocal message. If one listens, the same word is always heard in both ears. Even if both halves of the brain process the impression differently, the information sent to both halves of the brain from the eyes and opposite half of the brain will be the same. (See Figs. 20-25.)

Text, in contrast to speech has a spacial dimension, which is why one cannot read in any direction in the case of an asymmetric visual function (see Fig. 26), and neither are the aforementioned conditions satisfied if the text is located in the direction which equivalent to the individual's reading brain half. Therefore, the text must lie from left to right if the pupil reads with the left brain half and vice versa. In this way, the reader sees beforehand the coming text, receives feedback information at each point he concentrates on, that what he has read previously is correct. Furthermore, this text is extinguished at each saccadic eye movement forward because it moves over to the field of vision of the nonreading half of the brain. The illustrations below show reading with the left and right halves of the brain respectively, and why it is not possible to read forwards with the right half without great difficulty. Note, however, that if one has already learned to read, one recognizes again word patterns (printed text) even in the opposite reading direction.

The visual function differs in many ways from the auditory and kinesis/tactile perception.

With sight, we receive a quick orientation (even at distances) an infinite supply of visual stimuli in the form of objects or movements. With touch, we receive knowledge about the limited supply of stimuli which we come into direct contact with. With hearing, the auditory sources of stimuli are registered and our awareness is more exactly

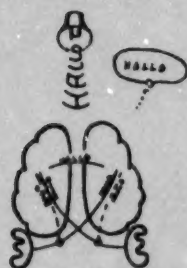


Fig. 20

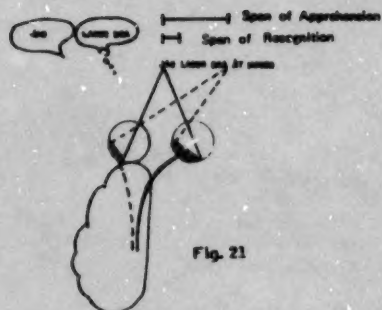


Fig. 21

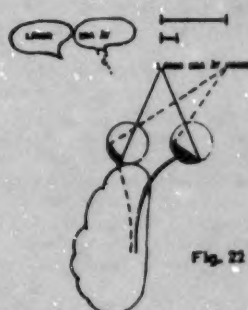


Fig. 22



Fig. 23



Fig. 24

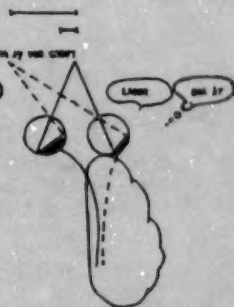


Fig. 25

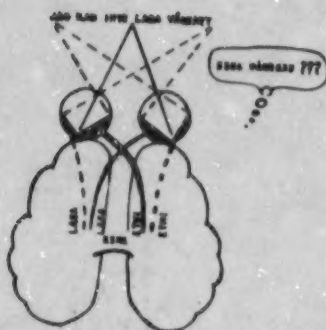


Fig. 26

focused and defined, and knowledge can be transferred from others through speech.

We must understand that we, unlike children, cannot be passive or passively take a mild interest in knowledge. We must be active, i.e., have the possibility of kinetic motor experiences and via language receive instruction as to what is important for us to know. Only through motor action can we produce an asymmetric brain function and only with speech as an instrument can we come under conceptive management, i.e., influence and be influenced towards a desired goal. I have only taken as a starting point in this article, pupils who have specific difficulties in reading and writing, i.e., difficulties which cannot be assigned to pedagogic, intellectual, emotional or motor deficiencies.

It is now possible to describe a simplified model of the visual conditions which can be used in cases of reading and writing difficulties.

1. Reading with left-half brain, where the right hemisphere does not influence the left-half brain, reading is best in the normal direction. Left-half-brain readers can be of two types:
  - a. Phonetic reading with a sequential left-half brain. The reader has the ability to speak, read and write in the left-half brain. Learning to read takes place at school age. Spelling is easy because the pupil "sees" if the word is correctly spelled.
  - b. Iconic reading with a simultaneous left-half brain. The reader has the ability to speak, read and write in the right-half brain (including left handers). Learning to read takes place at school age while the child is still a "picture looker" and reads according to the word pattern method, whereby he sees the word pattern from the first letter to the right. Spelling is based on rules, since further on he can no longer remember all new and increasingly long word patterns.

2. Reading with the right-half brain, where the left-half brain does not influence the right, reading is best from right to left. Right-half-brain readers can be of two types:
  - a. Iconic readers. All right handers read during their first year's word patterns and write (draw) words by means of the right-half brain. This means that the child who sits opposite his older sister at the table can quickly learn to read when the text is from right to left, i.e., when the text is inverted. Words are "drawn" the wrong way round during the first school years, as well as numbers and letters. Look at Fig. 27. Here 5-year-old Lovisa has written her name from right to left.
  - b. Phonetic reading with the right-half brain, i.e., the school age left-handed pupil who has started to abandon the previous iconic reading form. The pupil reads easily from right to left and writes gladly the wrong way round just like Leonardo da Vinci. See Fig. 28. Top right: Writing of a 13-year-old girl. Below: Writing example from Leonardo da Vinci, who probably did not see that he wrote mirror-like (reversed).

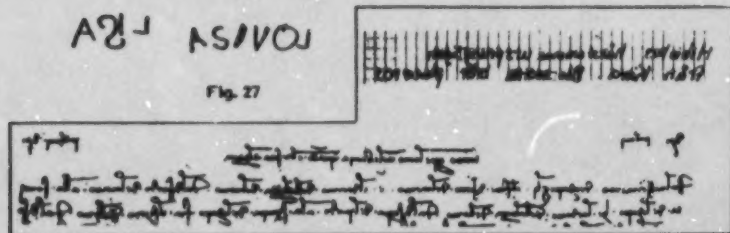


Fig. 28

3. Symmetric reading, where neither of the brain halves can read, but are instead influenced by the fact that the other half sees something else (extreme "b"-d" interchange). Reading is fine if there is no text on the other side of the fixation point. Vertical is therefore easy to read which many pupils find out at once when reading and writing. Unfortunately well-meaning teachers often force pupils to turn the book "right" which means that the pupil may have to study a considerable number of years at a reading clinic unnecessarily. See Figs. 26 and 29.

The majority of pupils with specific difficulties in reading and writing belong to this group. It has been noticed from an early stage that the first word of the line is manageable (there is only the margin on the left of the word) which is evident from this extract from Medical Terminology. "Dyslexia" (dys=poor, lexis=Greek lexas=word): (1) all reading disorders, (2) especially because the sick person only reads the first

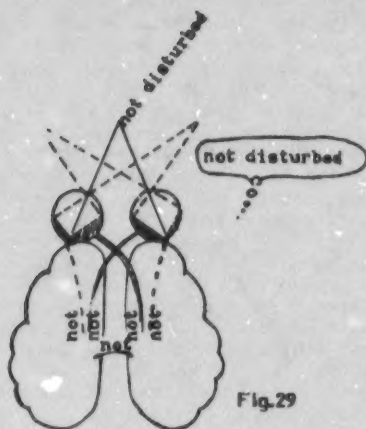


Fig.29

word and then suddenly stops.

Those so interested should find out if a text can be read in any direction whatsoever, if the text is only projected in the one field of view or if influenced when presented both to the right and left of the fixation point. Use the reading test below, c.f. Figs 6-13,26.

A reading test, for instance H4, is presented tachistoscopically on a computer screen where the computer has been programmed to indicate with a flash the first letter of each word as a fixation point, thereafter the complete word is projected for 50 milliseconds. Reading speed is controlled for the pupil by typing each new word on the keyboard. Another test is presented in a similar way, e.g., H5, but now with one word on the other side of the fixation point.

One finds in such tests that nearly all pupils with specific reading and writing difficulties who normally cannot read on a par with their school class, that with word after word presented to the right of the fixation point only, they can be at once placed within the normal variation for their year group. However, when the words are projected on the opposite side of the fixation point, reading is just as impossible to them as it was before. The pupil often says that he is disturbed by the presence of text both to the right and left.

With a reading right-half brain, we can consequently read via the corpus collosum text which has only been seen by the left-half brain, but if there is something in the field of vision of the right-half brain, the information in the right field of vision is extinguished. The exposed time reading test reveals that in order to be able to read, we must have arrived at a visual asymmetric brain function.

An easy way to ascertain if the pupil reads from left to right or right to left or reads symmetrically is as follows:

The pupil bites his tongue to prevent co-movements and transformation into speech. The pupil is then allowed to read a sentence in the

normal reading direction, followed by a sentence from right to left (inverted) and finally vertically (slightly pointed to the left for the left-handed pupils and to the right for right-handed ones). Record the time and get the pupil to repeat each sentence (word for word) after each reading. The sentences should be approximately the same.

Pupils who find difficulty in spelling should carry out a simple test. If the pupil finds it easy to spell words, or type them on a typewriter, he usually spells correctly if the test is carried out by touch only, where pictures do not interfere. Let the pupil write with his hand concealed or with his eyes closed, whereby the words are often correctly spelled. Notice also that such pupils write correctly with the paper almost vertical, in the direction of the arm that is writing.

#### How Does the Pupil Write Best?

1. Right-handed phonetic readers as a rule learn to read and write at an early stage on their own. Here it is nearly a question of how one can prevent the learning of reading and writing.
2. Right-handed iconic readers read inverted text best, but turn the book to the normal reading direction after a few weeks' reading and then read relatively normal. The pupil shouldn't write during the time he learns how to read; let him type without looking at the paper or cover the paper, or alternatively practice spelling orally. When the pupil has turned the text back to the normal reading direction, then writing is the best method to teach reading. To write nonsense words (e.g., Maja Witting monitored writing) is one way of writing phonetically.
3. Left-handed phonetic readers unfortunately must not read and write mirror-like (reversed) as Leonardo da Vinci did (Fig. 28), but can read inverted or read and write vertically. The majority of left-handed pupils learn at once to work vertically. Naturally, one should not change the angle of inclination until it is suspected that the pupil finds it extremely difficult to obtain an asymmetric visual (sequential) reading ability from left to right.
4. Left-handed iconic readers "draw" words from left to right and read word patterns from the first letter during the first school years and when they are still at the iconic visual level. Teaching them to read is facilitated by transferring to the phonetic reading form with the ability to spell correctly by following the instructions detailed in point 3.
5. Symmetric readers should read and write with the paper in the direction of the arm which is writing. Right-handers usually turn the text more and more to the normal position when reading, whereas left-handers leave it in the vertical position for both reading and writing.

It should also be noted that only a small number of left-handed pupils are, in fact, completely left-handed. The pupils who holds his pen in the well-known hooked style (Fig. 32) is usually a normal reader without any special reading and writing difficulties. The way in which the pen is held is considered to be an indication that left-handed pupils really read with the left-half brain. For such left-handed pupils, the instructions intended for right handers apply, apart from that it is the



left hand which holds the pen.

Try and change the reading direction. Many readers have read this article and spelled better when their eyes have not been disturbed by the illustrations.



Fig. 30

True left hander



Fig. 31

"True" left-handers  
read and write as  
above



Fig. 32

Left-handers who  
read and write well  
in normal way



Fig. 33

This is how  
the right-handed  
iconic reader  
reads and writes  
best

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**LANGAGE ET CERVEAU.** La réception et l'intégration de l'information sensorielle en ce qui concerne, par exemple, la lecture et l'écriture dépend du stade du développement du cerveau: activité d'un seul hémisphère; activité symétrique; activité asymétrique. Afin de bien faire la lecture de gauche à droite la portée de la compréhension doit s'étendre jusqu'à la droite du point de focalisation. L'étendue de la perception d'un lecteur qui utilise surtout l'hémisphère droit du cerveau va à gauche; cet individu trouve que la lecture est plus facile de droite à gauche. Si on tient le texte à l'envers les lettres se trouvent dans l'ordre correct pour un lecteur dominé par le cerveau droit. Quand l'activité du cerveau est symétrique il y a une amélioration de la lecture et de l'apprentissage, de même que de l'écriture. L'amélioration de la capacité de lire du sujet a été impressionnante.

**SPRACHE UND DAS GEHIRN.** Die Verarbeitung von Sinnesinformation, z.b. Lesen und Die Schreiben, hängt davon ab, welche Stufe der Entwicklung das Gehirn schon erreicht hat: Nur eine aktive Hälfte; symmetrische Aktivität; oder asymmetrische Aktivität. Gutes Lesen von links nach rechts verlangt eine rechts von Brennpunkt liegende Spannweite der Auffassung. Ein Rechtsgehirnleser hat die Spannweite links, und daher ist für ihn das Lesen leichter von rechts nach links. Man kann einfach den Text auf den Kopf stellen, und dadurch die Buchstaben in die richtige Anordnung für einen Rechtsgehirnleser bringen. Wenn die Gehirn-aktivität symmetrisch ist, werden das Lesen und das Lernen von einem Text verbessert. Ein ähnlicher Fall kann für das Schreiben vorgelegt werden. Erstaunlich Verbesserungen in Lesefähigkeit sind schon erreicht worden.

**LENGUAJE Y CEREBRO.** El proceso de información sensorial, por ejemplo en la lectura y escritura, depende de la etapa de desarrollo que ha logrado el cerebro, sólo una mitad activa, actividad semétrica u asemétrica. Para leer bien de izquierda a derecha, el palmo (espacio, lapso) de aprehensión tiene que estar a la derecha del punto de foco. El lector del cerebro derecho tiene el palmo a la izquierda, y por eso el leer es más fácil de la derecha a la izquierda. Colocar el texto de tal forma que la parte de arriba quede hacia abajo, es una manera fácil para conseguir que las letras queden en el orden correcto para un lector del cerebro derecho. Cuando la actividad del cerebro es semétrica, la lectura y el aprendizaje se mejoran. Un descubrimiento similar funciona para la escritura. Mejoramientos pasmosos en la habilidad de leer se han logrado.

**Relaxation in a College Management Class**

Patsy K. Barber

**Abstract**

Progress in using modified suggestopedia experimentally in college management classes is presented. This brief experiment shows some academic acceleration as well as improved morale and application to other areas of the students' life.

**Introduction**

I want to share with you a descriptive experiment using relaxation in an introductory management class during the 1981 Fall Semester. Since only one section of the course is offered each year in our small, two-year branch of the university, it has not been possible to have both a control and an experimental group. Therefore, I will only describe the rationale for the experiment and the results.

Students in management are confronted with information, research, challenges and application of their knowledge to their current employment or to a future full-time career. Students understand clearly that they undergo stress, so the application of relaxation to the job is relevant. Herbert Benson, writing about tension and health, states:

Although stress harms health, the executive cannot escape it; however, he can counteract it by the "relaxation response." As much as any group in history, modern administrators are overworked, pressured, and squeezed, often to the point of physical illness or emotional misery. Their characteristic ambitions constantly lead them into struggles that stretch their capacities. Many cannot stand up to it; their reactions range from subtle malaise to heart attacks. (Benson, 1974, p. 50).

This management class completed the Litwin and Stringer Twelve-Point Needs Survey indicating their individual needs (1) to achieve, (2) for power, and for affiliation. Without deviation, the fifty-five students scored High Needs for Power and Affiliation and scored Low Need in Achievement. This indicates, among other things, that they will be subjected to the same stresses in the work arena as are the current executives/administrators.

Benson also emphasized the value of relaxation:

Fortunately, there is an extremely simple technique by which the executive can alter his physiology from the stressful mode toward calm--even decrease his blood pressure. It can be practiced easily and with immense rewards in physical and emotional well being. (Benson, 1974, p. 50).

Thus, one of my goals for the class was to acquaint them with a

simple, preventive measure, one adaptable both for the present and the future.

We know that the amount of information that college teachers have about their impact upon students is at best minimal, certainly subjective, and untested on a broad scale. I wanted to make a new beginning and ask myself what it will take to make the college years more effective for the different kinds of individuals in this group. I wanted to introduce the students to a technique to prove that they could learn more easily and recall masterfully, a technique to be applied to the tasks facing us.

Educator Walene James also questioned what objectives should be redefined in order to improve learning and retention:

...cut across our present departmental approach to subject matter and, instead, define our objectives more along task lines. I would single out such tasks as the ability to make generalizations, grasp of methods that lead to results, independence of thinking, communicating one's knowledge to others, capacity to listen, and to read so that one understands.

These are intellectual tasks. I would add emotional tasks, such as being able to ascertain what one's interest are, and have the strength to pursue an interest so ascertained; autonomy under adult, peer, or conventional pressures;... regulation of impulse without either strangulation or explosion; growth in insight. (James, 1977, p. 56).

Intellectual tasks are of prime importance. But students are reward-oriented. Vincent Tinto reported in his work in higher education that grades remain a part of the reward system:

Grades tend to be the most visible form of reward in the academic system of the college. They represent in this respect, an extrinsic form of reward of the person's part in the college--one that can be utilized by persons as tangible resources for future education and career mobility. Intellectual development represents a more intrinsic form of reward that can be viewed as an integral part of the person's personal and academic development. (Tinto, 1975, p. 104).

Thus, my quest concerned the value of relaxation in learning and retention and the grade reward. Would achievement then lead to higher individual and class morale? James found high morale and interest when she changed her curriculum methods:

According to the latest findings from studies of student achievement, the critical factors in learning do not depend upon high monetary expenditures such as expensive electronic equipment or small classes. The critical factors are quite simply the caliber of instruction and morale--the morale of both students and teachers. One of the definitions of morale is "a confident...often buoyant spirit of whole-hearted cooperation in a common effort." (James, 1977, p. 19)

We found through student-teacher observation and written evaluations

at the conclusion of the semester that the relaxation factor contributed to delight and enthusiasm in a common enterprise. An amusing incident at the beginning of each class session, once relaxation began, was the punctual turning-off the lights in order to darken the room. Another indication of the enthusiasm of the students was feedback to the instructor from nine class members that the low buzz in the classroom preceding related to heightened anticipation for relaxation.

Arthur P. Brief and others, researching job stress and how to manage it declares,

Some form of relaxation technique might be expected to produce therapeutic effects that can help individuals cope with job stress. For instance, Roskies et al. (1978) employed a progressive relaxation training technique along with other strategies in an attempt to reduce the dysfunctional consequences experienced by 12 male professionals and executives whose behavior conformed to the Type A syndrome. The intervention reduced cholesterol and blood pressure levels without inducing change in diet, exercise, smoking habits, or responsibilities and time spent at work. (Brief, 1981, p. 105)

Brief compared the cost of biofeedback and relaxation, conceding the latter is cost effective:

...relaxation techniques generally are superior to biofeedback in terms of convenience and cost (Silver and Blanchard, 1978). It is probably slightly more convenient for a person not to be connected to a machine.... (Brief, 1981, p. 105)

The format we used daily, with two exceptions, followed the students' consenting to the experiment. The introduction suggested modifying current education goals, methods and learning outcomes to which they have been exposed for some fourteen years.

Modifying indicated that a brief understanding could prove helpful of what research tells us about the general functions of the right brain and left brain. The left brain seems to be primarily a word-oriented linear system of learning. It appears that we can be more successful in learning at a rapid rate and recalling if the right brain with its ability to engage emotions and feelings is involved simultaneously. It is here in the dual involvement process that the relaxation technique assists the right brain and left brain to synchronize "programming" effectively.

The classroom environment was altered slightly to provide for relaxation. The room is located in a relatively noise-free area. Adjusted blinds and turning off the two sets of overhead lights provided a darkened setting free of most distractions.

The fifty-five students were requested to move their chairs until they could get into a comfortable position with ample stretch space. With eyes closed, they engaged in four to six deep breaths; an infusion of energy and exhilaration was suggested with the value of deep breathing.

The Jacobson relaxation technique, a progressive tensing and relaxing of major muscles from feet to head or reverse, was successfully



used.

After deep breathing and relaxing, the students were guided in a visualization experience from SuperLearning tapes as well as my own tapes which included all of the five senses: walking along the seashore, feeling the grains of sand under the feet; feeling the sea breeze brushing across the salty water onto their faces; staring across the azure water; viewing the luminescent sky overhead; watching fluffy, white clouds gliding by; following a tiny ship drifting on the horizon; hearing the rhythmic cadence of waves; experiencing the warmth of the sun filling their entire bodies, its energy radiating; perhaps suggesting, "You are completely relaxed, you are at peace, you are happy, you are contented and exhilarated."

Taped music of harp, flute, cymbals or guitar was played for at least three minutes as students continued enjoying their creative scene. If the music stopped short of three minutes, they openly stated that their time was cut.

Six to ten minutes of a 75-minute class session were reserved for the relaxation. Twice the music and relaxation were omitted purposefully. On the first occasion, the students asked why it was omitted. I replied that I was anxious to get to the lecture, which was not a satisfactory answer. The second time it was omitted prior to an exam. Their grades plummeted, and they requested that henceforth relaxation precede an exam.

My observation was that male students were eager to enter in in the relaxation period while the women were hesitant to become involved; some giggled, others pretended to be complying. One woman never cooperated and sat quietly with her eyes open.

The excitement created by the modified suggestopedia meant that when I walked into the classroom, an absence of quietness was replaced by a mood of vitality, expectation, and eagerness. The interest and application of relaxation did not remain only in that management class. Students relate how they use the technique for other classes, stressful situations in their lives, inducing sleep, before studying, and before examinations.

Here are selective student evaluations concerning the relaxation:

I found the relaxation very interesting as it was my first experience with it. It is very relaxing and does work to reduce stress. I find myself using it anytime I feel a need to relax. Thank you for introducing us to it.

I found that the relaxation tapes were very helpful. I seemed to be able to focus my attention much longer on the subject matter being presented. I even noticed that on days when the tapes were not played, I was easily diverted. It was an interesting experience that I think needs more attention. I have even found it helpful to use the breathing exercises to help me relax in other classes.

I feel that the relaxation period really helped me before the test. It seemed to help me let go of the stress and also forget



about my problems that I brought to class. It just made me relax and helped me on the exams.

I believe that relaxation did have some effect on the grades that I made this semester in management. It helps relieve some of the tension you feel before a test and helps you to be more relaxed while testing.

I think the whole class has been a good one. I found out that if you put yourself in the right frame of mind, then what you are trying to do comes about easier.

I thought the music was a good part of the class. I found the relaxation right before the test a good technique. It helped relieve the test pressure and tension. It also helped me to relax on days when other classes were getting me down.

There appears to be some carryover after the initial training session (self-hypnosis?). I've used the relaxation technique on my own with good results. You should continue using the tapes in future classes.

I liked the relaxation exercises. More than relaxing, though, I think that the technique was more of a group cohesive factor with me. Doing something like this brings a group closer together and promotes a better learning atmosphere.

I think the relaxation exercises helped me. My grades were better and I felt better. I felt free of tension. After each relaxation exercise my mind seemed clear and I felt more alert.

Yes, the relaxation exercise was a very good idea. When I came in this class, I had just left a class of mass confusion, and I always felt irritated and anxious. After taking a few moments to relax, I completely forgot my frustrations and was ready to absorb new material. Thank you.

I found the relaxation exercises to be helpful. It helped you to relax your mind and body and it helped to rid your mind of all other problems for a little while. I would recommend that it is a continued exercise. It also helped take away some of the nervousness before a test.

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LA RELAXATION DANS UNE CLASSE UNIVERSITAIRE DE MANAGEMENT. On présente un rapport sur les progrès réalisés lorsqu'on utilise une adaptation expérimentale de la suggestopédie dans des classes universitaires de management. Cette expérience montre une accélération de l'apprentissage et, en même temps, une amélioration du moral et de la vie personnelle des étudiants.

ENTSPANNUNG IN EINEM HOCHSCHULVERWALTUNGSKURS. Hier wird Fortschritt im Gebrauch von dem modifizierten Suggestopädieversuch in Hochschulverwaltungskursen präsentiert. Dieser kurze Versuch zeigt etwas Beschleunigung sowie verbesserte Stimmung und Anwendung in anderen Lebensgebieten der Studenten.

LA RELAJACIÓN EN UNA CLASE DE MANEJO EN UNA UNIVERSIDAD. El progreso en el uso de sugestopedia modificado experimentalmente en clases de manejo en una universidad es presentado. Este experimento corto muestra alguna aceleración académica tan bien como la moral mejorado y aplicación a otras áreas de la vida de estudiantes.

**The Effect of Group Relaxation Exercises  
On Second- and Six-Grade Children's  
Spelling Scores\***

Polly L. Johnson

**Abstract**

The purpose of this study was to investigate the effects of short-term, group relaxation exercises on second- and sixth-grade children's spelling scores. In this investigation, a pretest-posttest control group design was utilized. One experimental and one control group at the second-grade level and one experimental and one control group at the sixth-grade level were established. Experimental groups were given relaxation training with spelling instruction. Control groups were given no relaxation training with spelling instruction. Within the limitations of the study, the following conclusions were drawn:

1. Second-grade students with previously identified "good" or "poor" spelling skills can benefit from relaxation training as measured by their spelling performance on word lists selected from their grade level.
2. Sixth-grade students initially identified as "poor" spellers showed more spelling improvement from pretest to posttest than did the sixth-grade students initially identified as "good" spellers.
3. Providing relaxation training to "good" sixth-grade spellers may not benefit their recall of written word lists.
4. Short-term relaxation training (in this study, 9 sessions) appeared to have a beneficial effect on children's spelling performance.

**Introduction**

Relaxation training is an important aspect of transpersonal psychology applied in education (Roberts and Clark, 1975). Earlier studies of relaxation training were reported in medical and therapy journals (Brown, 1977); recent relaxation studies have been reported in the educational literature. Examination of the literature reveals considerably more data concerning the effect of relaxation training on the reduction of stress and stress-related disorders than on possible effects of relaxation training on measures of learning.

Under conditions of relaxation, adults and adolescents have

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\*This paper is a condensation of the author's dissertation for her Ed.D. at Northwestern State University of Louisiana, 1982, and was presented in part at the 1982 SALT Conference, Colorado State University.

demonstrated reduction of test anxiety (Bedell, 1976), improvement in group problem solving (Kindler, 1979), and reduction in the use of drugs and alcohol (Brown, 1977:87-91). Children have demonstrated reduction of anxiety (Koeppen, 1974) and hyperactivity (Brown, 1977:85-86, McBrien, 1978) and, in one study (Frey, 1980), improved reading achievement under conditions of relaxation.

In 1972 Keat suggested that relaxation techniques may reduce anxiety in elementary grade children. Koeppen (1974) and Schultz (1980) reported that grade-school children exhibit and subjectively experience less anxiety concerning personal and school-related matters during and following relaxation training. McBrien (1978) reported the use of relaxation training for the treatment of hyperactivity. Frey, in a study conducted in West Germany and reported in the *Reading Teacher*, May, 1980, found that fifteen minutes' relaxation training, given once a week for a school year, raised reading achievement and lowered anxiety among disabled readers.

Relaxation theorists Anderson and Savary (1972:25-26) have stated that learned relaxation produces balance of mind and body and a condition of readiness which permits improved attention to learning tasks. The focus of this investigation was on the effect of relaxation training on second- and sixth-grade student's spelling scores. The rationale for the study was that relaxation training reportedly reduces anxiety and hyperactivity in children, thereby improving attention to the task of learning spelling words. Significant spelling-score gains should be obtained by students experiencing relaxation training combined with spelling instruction as opposed to students' receiving spelling instruction with no relaxation training.

#### Statement of the Problem

The purpose of this study was to investigate the effects of short-term, group relaxation exercises on second- and sixth-grade children's spelling scores.

#### Hypotheses

The following hypotheses were tested for statistical significance at the .05 level of confidence:

1. A significant difference exists between the mean spelling scores of second-grade students receiving relaxation training with spelling instruction and second-grade students receiving no relaxation training with spelling instruction.
2. A significant difference exists between the mean spelling scores of second-grade students previously identified as "good" spellers and receiving relaxation training with spelling instruction vs. second grade students previously identified as "good" spellers and receiving no relaxation training with spelling instruction.
3. A significant difference exists between the mean spelling scores of second grade students previously identified as "poor" spellers and receiving no relaxation training with spelling instruction vs. second grade students previously identified as "poor" spellers and receiving no relaxation training with spelling instruction.
4. A significant difference exists between the mean spelling scores of sixth-grade students receiving relaxation training with spelling instruction and sixth-grade students receiving no relaxation

- training with spelling instruction.
5. A significant difference exists between the mean spelling scores of sixth-grade students previously identified as "good" spellers and receiving relaxation training with spelling instruction vs. sixth-grade students previously identified as "good" spellers and receiving no relaxation training with spelling instruction.
  6. A significant difference exists between the mean spelling scores of sixth-grade students previously identified as "poor" spellers and receiving relaxation training with spelling instruction vs. sixth-grade students previously identified as "poor" spellers and receiving no relaxation training with spelling instruction.

#### Delimitation of the Study

This quasi-experimental study was conducted in two schools rural parish in central Louisiana, during the fall semester, 1981, to investigate the effect of group relaxation exercises on second- and sixth-grade children's spelling scores. "Quasi-experimental designs can be used by researchers when true experimental designs are not possible or feasible." (Huck, 1974:301) Quasi-experimental and true experimental designs each have certain research advantages. As a general rule, quasi-experimental designs have greater control over external than internal threats to validity. A quasi-experimental design utilizing naturally-formed or intact groups can be expected to show decreased subject reactivity. "In contrast, subjects who are randomly assigned to comparison groups (as with true experimental designs) are likely to be more reactive and to be more aware of the purposes of the research," (Huck, 1974:302). Kerlinger (1973:402) stated that a major advantage of field experiments in educational settings is the similarity to routine educational activities.

A modified cluster-sampling technique was used in the selection of the experimental and control subjects. Cluster sampling is defined by Kerlinger (1973:130) as "successive random sampling of units, sets, and subsets." In this study, the sets and subsets were the elementary schools within a central Louisiana parish and classes within those schools. A table of random numbers was utilized to randomly select the sets and subsets. Experimental and control subjects were drawn from different schools in order to control the effect of experimental subjects' "teaching" relaxation techniques to control subjects.

Second- and sixth-grade students were selected to participate in this study to represent the stages of intellectual development (as postulated by Piaget) most representative of elementary school students. The elementary school child is likely to be at either the pre-operational or the concrete-operational stage of development (Swensen, 1973:13). Second-grade students represent intellectual development at the latter part of the pre-operational stage and the beginning of the concrete-operations stage. Sixth-grade students represent intellectual development at the latter part of the concrete-operations stage and the beginning of the formal operations stage.

Spelling was chosen as the subject matter to be learned in this investigation of the effects of relaxation training on a measure of elementary-level school learning for several reasons:

1. Spelling is a basic skill important to other areas of school



- achievement and to out-of-school personal and vocational life.
2. Spelling instruction in the elementary school is relatively uniform (usually observing the instructional format presented in the spelling series employed).
  3. Recommended spelling instructional time of 10-15 minutes daily (Johnson, 1981) facilitated incorporation of relaxation training with spelling instruction.

Relaxation training scripts were adapted from the literature and tried in second- and sixth-grade classrooms (prior to the experimental application) to validate grade-level appropriateness.

"Good" and "poor" spellers were determined on the basis of pretest spelling scores. The median of the pretest was the criterion used to distinguish between "good" and "poor" spellers.

The data collected were the pretest and posttest spelling scores of the experimental and control group members. Data were analyzed by separate one-way analyses of covariance for the three hypotheses for each grade level. The statistical test for significance employed was the F-test of between groups variance.

#### Definition of Terms

Definitions of the special terms used in this study are listed below:

Spelling Score. The term "spelling score" refers to the number of correct responses recorded on the pretest or posttest by each subject participating in the study.

"Good" Speller is an attribute variable assigned to students who scored above the median (in the upper 50 percent) on the pretest for their group.

"Poor" Speller is an attribute variable assigned to subjects who scored below the median (in the lower 50 percent) on the pretest for their group.

Learned Relaxation refers to a consciously attained relaxed state, which may or may not become an habitual response.

Relaxation Training refers to a period of time devoted to physical and mental tasks under the direction of a trainer. The physical tasks involved in relaxation training are slow, deep breathing and muscle tensing and relaxing. The mental tasks are mental imagery, fantasy, and autosuggestion. In this study, relaxation training consisted of nine, 15-minute training sessions.

Relaxation Exercises are groups of mental and physical tasks performed under the direction of a trainer. The relaxation exercises in this study were conducted with groups of students and employed the following components: 1) slow, deep breathing; 2) muscle tensing; 3) muscle relaxation; 4) imagery; 5) fantasy, and 6) suggestion.

Relaxation Script refers to the exact words and phrases used by the trainer in directing a relaxation exercise.



## Method

Spelling instruction was conducted in the control and experimental classrooms by the regular classroom teachers. Relaxation training was conducted in the experimental group classrooms by the investigator.

The experimental and control group procedures were the same except for relaxation training in the experimental groups and no relaxation training in the control groups. The following list summarizes the experimental group procedures for each day of the study.

1. First day
  - a. The classroom teacher administered the pretest.
  - b. The investigator introduced relaxation exercises and conducted the first relaxation training session.
  - c. The classroom teacher explained that for the following two weeks, spelling instruction and study would all be conducted at school. Students were not to take home spelling books or spelling lists for home study, but to employ their best efforts to learn the spelling words during class spelling period.
  - d. The classroom teacher introduced Spelling Unit 34 and taught Section A of the unit.
2. Second day
  - a. The investigator conducted the second relaxation training session.
  - b. The classroom teacher taught Section B of Spelling Unit 34.
3. Third day
  - a. The investigator conducted the third relaxation training session.
  - b. The classroom teacher taught Section C of Unit 34.
4. Fourth day
  - a. The investigator conducted the fourth relaxation training session.
  - b. The classroom teacher taught Section D of Unit 34.
5. Fifth day
  - a. The investigator conducted the fifth relaxation training session.
  - b. The classroom teacher administered the weekly spelling test. These test scores were for the use of the classroom teacher only and were not a part of the statistical analysis of the experimental design.
6. Sixth day
  - a. The investigator conducted the sixth relaxation training session.
  - b. The classroom teacher introduced Spelling Unit 35 and taught Section A of the unit.
7. Seventh day
  - a. The investigator conducted the seventh relaxation training session.
  - b. The classroom teacher taught Section B of Unit 35.

8. Eighth day
  - a. The investigator conducted the eighth relaxation training session.
  - b. The classroom teacher taught Section C of Unit 35.
9. Ninth day
  - a. The investigator conducted the ninth and final relaxation training session.
  - b. The classroom teacher taught Section D of Unit 35.
10. Tenth day
  - a. The classroom teacher administered the posttest.
  - b. The investigator collected the record of posttest scores from the classroom teacher.

Relaxation training and spelling instruction were conducted from 12:05-12:30 p.m. in the second-grade experimental class and from 12:50-1:15 p.m. in the sixth-grade experimental class. Teachers of the second- and sixth-grade control classes scheduled their spelling instruction from 12:05-12:30 p.m. for the second grade and from 12:50-1:15 p.m. for the sixth grade to correspond to the times of spelling instruction in the experimental groups.

#### Data and Instrumentation

In order to conduct this study, relaxation training scripts were developed specifically for use with the second- and sixth-grade level experimental groups. Relaxation training scripts for the sixth grade were adapted from descriptions by Brown (1977), Ostrander et al. (1979), Hendricks and Wills (1975), Lupin (1981), and Macleod (1981). Relaxation training scripts for the second grade were developed from descriptions by Koeppen (1974), Hendricks and Wills (1975), McBrien (1978), Ostrander et al. (1979), and Lupin (1981).

The relaxation training scripts developed for this study include directions for slow, deep breathing, muscle tensing and relaxing, imagery, fantasy, and suggestion. Some relaxation scripts were adapted from the literature with little change; others were created by the investigator according to suggestions from the literature.

Before their use with the experimental groups of this study, all scripts were typed, taped on cassettes, timed, edited, retyped, and tried in second- and sixth-grade classes from a school in the system where this study was conducted, but not in classes from the experimental or control schools. The purpose of the script tryouts was to validate grade-level appropriateness as determined by pupil-teacher response to the scripts. The tryout of scripts revealed that much day-to-day repetition in the muscle tensing/relaxing directions was well tolerated by sixth-grade students, but that second-grade students responded better to more varied instructions from day to day for tensing and relaxing of muscles. Second graders became restless and inattentive with much repetition in instructions for muscle tensing/relaxing exercises. Both age groups responded well to fantasy trips involving mental imagery. An apparent favorite fantasy trip for both groups was the creation through mental imagery of a special room. As a result of the script tryouts, the muscle tensing/relaxing segments of three level-two scripts were rewritten. The other scripts tried out were judged to

be appropriate for grade level according to teacher comments and pupil responsiveness.

The interval level data collected in this study consisted of the spelling scores earned on the pretest and posttest given to each subject in each group of the study. The second-grade pretest/posttest of twenty words consisted of all the new spelling words introduced during the two-week experimental period. The eight review words (four from each unit) were omitted from the second-grade pretest/posttest list. The sixth-grade pretest/posttest list of twenty-four words consisted of every other word as they appeared in the text of the two spelling units covered during the two-week experimental period. The total textbook list of forty-eight words was reduced to twenty-four words in order to facilitate administration during the instructional time block assigned for spelling. The grade-two posttest consisted of the same twenty words as the grade-two pretest, and the grade-six posttest consisted of the same twenty-four words as the grade-six pretest. Roscoe (1975:352) stated that the pretest and the posttest may appropriately be the same instrument when analysis of covariance is the statistic used to determine differences between adjusted posttest means.

The independent variables of this study were the experimental and control conditions of spelling instruction. In the experimental condition, spelling instruction included fifteen minutes of relaxation training. In the control condition, no relaxation training was given. Spelling instruction was the same for all groups with the exception of relaxation training and no relaxation training.

In this study, the pretest was the covariate and the posttest was the criterion or dependent variable. "Good" and "poor" spellers were attribute variables assigned on the basis of pretest spelling scores.

#### Analysis of the Data

The scores earned by each subject on the pretest and posttest constituted the raw data for this study. Two-way analysis of covariance was used to compare the adjusted posttest means of the experimental and control group scores on the three hypotheses for each grade level. "The analysis of covariance is a blending of regression and the analysis of variance, which permits statistical rather than experimental control of variables. The result is equivalent to matching the various groups with respect to the variable or variables being controlled" (Roscoe, 1975:351). "Many authors use the analysis of covariance for the purpose of adjusting for initial group differences" (Huck, 1974:134-135). The use of the covariate data within an analysis of covariance provides a more powerful (sensitive) statistical analysis than analysis of posttest data alone (Huck, 1974:135).

In this study, the problem was to find out whether relaxation training incorporated with spelling instruction and spelling instruction with no relaxation training differ in the extent to which they facilitate student written recall of spelling words taught. Analysis of covariance was selected as the statistic in order to combine statistical control with experimental control of variables, to adjust for possible initial group differences, and to provide a more powerful statistical analysis than would be provided by a *t* test or one-way analysis of variance.

The following hypotheses were tested for statistical significance at

the .05 level of confidence utilizing separate analyses of covariance for grade-two and grade-one data:

1. No significant difference exists between the mean spelling scores of students receiving relaxation training with spelling instruction and students receiving no relaxation training with spelling instruction.
2. No significant difference exists between the mean spelling scores of students previously identified as "good" spellers vs. students previously identified as "poor" spellers (less than average scores in the spelling pretest).
3. No significant interaction exists between the two previous factors of relaxation training and spelling ability.

#### Presentation and Analysis of Data

The focus of the study was whether relaxation training with spelling instruction vs. no relaxation training with spelling instruction facilitated student written recall of spelling words taught. A pretest-posttest control group design was used in this quasi-experimental study.

The scores earned by each subject on the pretest and posttest constituted the raw data for treatment. Analysis of covariance was computed to compare the adjusted posttest means of the experimental and control group scores on the three hypotheses for each grade level. The F-ratio was the statistic used to test for significance between groups.

#### Second Grade Data

The pretest and posttest spelling scores for the second grade experimental and control groups are presented in Table 1. The pretest median for each group was used to distinguish between "good" and "poor" spellers in that group. The data from Table 1 were used to compute the analysis of covariance for the three hypotheses concerning second grade spelling performance.

The summary of the analysis of covariance for grade two is presented in Table 2. Null Hypothesis 1, no significant difference exists between the mean spelling scores of second-grade students receiving relaxation training with spelling instruction and second-grade students receiving no relaxation training with spelling instruction, was rejected.

Null Hypothesis 2, no significant difference exists between the mean spelling scores of second-grade students previously identified as "good" spellers on the pretest and second-grade students identified as "poor" spellers, was rejected.

Null Hypothesis 3, no significant interaction exists between the effects of relaxation training and spelling ability, was rejected. The spelling averages for these effects are given in Table 3.

#### Sixth Grade Data

The pretest and posttest spelling scores for the sixth-grade experimental and control groups are presented in Table 4. The pretest median for each group was used to distinguish between "good" and "poor" spellers in that group. These data were used to compute the analysis of covariance for the three hypotheses concerning sixth-grade

**Table 1**  
Pretest and Posttest Second Grade Spelling Scores for  
Experimental and Control Groups

| Attribute<br>Variables | Relaxation<br>Training |          | No Relaxation<br>Training |          |
|------------------------|------------------------|----------|---------------------------|----------|
|                        | Pretest                | Posttest | Pretest                   | Posttest |
| Good<br>Spellers       | 13                     | 20       | 19                        | 20       |
|                        | 13                     | 20       | 15                        | 20       |
|                        | 8                      | 20       | 14                        | 20       |
|                        | 7                      | 20       | 10                        | 15       |
|                        | 7                      | 10       | 5                         | 15       |
|                        | 7                      | 15       | 9                         | 12       |
|                        | 6                      | 16       | 8                         | 20       |
|                        | 6                      | 20       | 7                         | 16       |
|                        | 6                      | 20       | 6                         | 14       |
|                        | 5                      | 20       | 6                         | 20       |
| Poor<br>Spellers       | 5                      | 16       | 6                         | 16       |
|                        | 5                      | 16       | 6                         | 16       |
|                        | 5                      | 20       | 5                         | 12       |
|                        | 4                      | 18       | 5                         | 7        |
|                        | 4                      | 16       | 5                         | 15       |
|                        | 4                      | 15       | 5                         | 15       |
|                        | 2                      | 16       | 4                         | 11       |
|                        | 2                      | 13       | 4                         | 8        |
|                        | 1                      | 17       | 2                         | 5        |
|                        | 1                      | 15       | 0                         | 2        |

**Table 2**

Analysis of Covariance for the Effects of Relaxation Training  
Ability on Second Grade Posttest Spelling Scores

| Source      | DF | MS     | F       |
|-------------|----|--------|---------|
| Relaxation  | 1  | 208.89 | 24.58** |
| Ability     | 1  | 35.69  | 4.20*   |
| Interaction | 1  | 43.49  | 5.12*   |
| Pretest     | 1  | 62.00  | 7.30**  |
| Error       | 35 | 8.50   |         |

\* $p < .05$ , \*\* $p < .01$

spelling performance.

The summary of the analysis of covariance for grade six is presented in Table 5. Null Hypothesis 4, no significant difference exists between the mean spelling scores of sixth-grade students receiving relaxation training with spelling instruction and sixth-grade students receiving no relaxation training with spelling instruction, was rejected.

Null Hypothesis 5, no significant difference exists between the mean spelling scores of sixth-grade students previously identified as "good"

Table 3

Adjusted Averages of Second Grade Posttest Spelling Scores by Level of Relaxation Training and Spelling Ability

| Ability | Relaxation |      |
|---------|------------|------|
|         | No         | Yes  |
| High    | 15.5       | 18.2 |
| Low     | 10.7       | 17.6 |

Table 4

Pretest and Posttest Sixth Grade Spelling Scores for Experimental and Control Groups

| Attribute Variables | Relaxation Training |          | No Relaxation Training |          |
|---------------------|---------------------|----------|------------------------|----------|
|                     | Pretest             | Posttest | Pretest                | Posttest |
| Good Spellers       | 19                  | 24       | 21                     | 21       |
|                     | 18                  | 23       | 20                     | 22       |
|                     | 18                  | 24       | 20                     | 20       |
|                     | 18                  | 24       | 20                     | 20       |
|                     | 17                  | 24       | 18                     | 19       |
|                     | 17                  | 23       | 18                     | 22       |
|                     | 16                  | 20       | 17                     | 21       |
|                     | 15                  | 23       | 16                     | 24       |
|                     | 13                  | 23       | 16                     | 24       |
|                     | 13                  | 19       | 17                     | 21       |
|                     | 13                  | 18       | 15                     | 23       |
| Poor Spellers       | 13                  | 24       | 15                     | 23       |
|                     | 12                  | 24       | 12                     | 20       |
|                     | 12                  | 19       | 11                     | 19       |
|                     | 12                  | 22       | 10                     | 20       |
|                     | 10                  | 21       | 10                     | 19       |
|                     | 10                  | 22       | 9                      | 18       |
|                     | 8                   | 21       | 9                      | 15       |
|                     | 8                   | 18       | 6                      | 16       |
|                     | 4                   | 16       | 3                      | 10       |
|                     |                     |          |                        |          |

spellers and those previously identified as "poor" spellers, was not rejected.

Null Hypothesis 6, no significant interaction exists between the effects of relaxation training and spelling ability, was not rejected.

The averages for these effects are given in Table 6.



Table 5

Analysis of Covariance for the Effects of Relaxation Training and Ability on Sixth Grade Spelling Posttest Scores

| Source      | DF | MS     | F       |
|-------------|----|--------|---------|
| Relaxation  | 1  | 43.41  | 10.84** |
| Ability     | 1  | 12.65  | 3.16*   |
| Interaction | 1  | 0.02   | 0.00*   |
| Pretest     | 1  | 116.14 | 29.00** |
| Error       | 35 | 4.00   |         |

\* $p < .05$ , \*\* $p < .01$

Table 6

Adjusted Averages of Sixth Grade Posttest Spelling Scores by Level of Relaxation Training and Spelling Ability

| Ability | Relaxation |      |
|---------|------------|------|
|         | No         | Yes  |
| High    | 20.8       | 22.8 |
| Low     | 18.8       | 20.9 |

#### Conclusions

Based upon the statistical findings of this study concerning the effect of group relaxation exercises on second- and sixth-grade children's spelling scores and within the limitations of the investigation, the following conclusions are offered:

1. Relaxation training is effective in improving spelling achievement of second-grade children.
2. Second-grade students initially identified as "poor" spellers showed more spelling improvement (64%) with relaxation than did students initially identified as "good" spellers, 21% improvement with relaxation.
3. Relaxation training is effective in improving spelling achievement of sixth-grade children.
4. Short-term relaxation training (9 sessions in this study) had a beneficial effect on children's spelling performance for both grades two and six.

#### Recommendations

As a result of the findings reported in this study, the following recommendation is offered:

1. School administrators should seriously consider providing inservice education in relaxation training techniques for second- and sixth-grade teachers, and should encourage their use in the classroom.
2. In the light of research findings reviewed from the literature and the results of this study, teacher education departments

might wish to consider inclusion of relaxation training in teacher education curricula.

3. Further research should be undertaken on the effects of short-term relaxation training on learning:
  - a. other subject-matter areas as math, vocabulary, etc.,
  - b. measures of spelling other than word lists,
  - c. measures of retention.
4. In studies of the effect of relaxation training on measures of learning, care should be exercised to make certain that the subject matter selected is sufficiently difficult to allow for measurable gains from pretest to posttest.
5. Consideration should be given to utilizing this study as a pilot model for replication on a broader scale.
6. Studies designed to measure the relative effect of each of the various components employed in this relaxation training model could be helpful in better understanding relaxation as a factor in learning. Components which could be studied are:
  - a. deep breathing,
  - b. muscle tensing/relaxing,
  - c. mental imagery and fantasy, and
  - d. suggestion.

For more than fifty years, learned relaxation has been used in the treatment of emotional and psychosomatic disorders (Brown, 1977:42). Learned relaxation has recently been identified as an important application of transpersonal psychology in education (Roberts and Clark, 1975:9). Evidence is mounting that learned relaxation is a state of consciously attained mental and physical readiness which greatly facilitates accelerated learning.

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L'EFFET DES EXERCICES DE RELAXATION DE GROUPE SUR LES SCORES ORTHOGRAPHIQUES DES ÉLÈVES DE ONZIÈME ET DE SIXIÈME. Le but de cette étude fut l'investigation des effets des exercices de relaxation de groupe à court terme sur les scores orthographiques des élèves de onzième et de sixième. Dans cette enquête on utilisa comme moyen de contrôle des tests potérieurs et antérieurs à l'expérience. On établit un groupe expérimental et un groupe de contrôle au niveau de sixième. On donna aux groupes expérimentaux un entraînement de relaxation et en mêmes leçons d'orthographe mais sans exercices de relaxation. Dans les limitations de l'étude on put tirer les conclusions suivantes:

1. Les élèves de onzième, qu'ils fussent bons ou faibles en orthographe profitèrent de l'expérience.

2. Les élèves de sixième qui étaient très faibles en orthographe profitèrent de l'expérience et leurs scores après l'expérience furent supérieurs à leurs notes avant l'expérience. Ceci en contraste avec les élèves qui étaient plutôt forts en orthographe qui ne montrèrent pas les mêmes progrès.

3. Les exercices de relaxation ne furent pas très avantageux aux élèves de sixième en ce qui concerne la rétention des listes de mots écrits.

4. Un entraînement de relaxation à court terme (c'est-à-dire neuf séances dans cette expérience) parut avoir une influence positive sur la performance orthographique des élèves.

DIE WIRKUNG VON GRUPPENENTSPANNUNGSÜBUNGEN AUF BUCHSTABIERUNGSLEISTUNGEN VON KINDERN IN DEN 2. UND 6. KLASSEN. Diese Forschungsarbeit hatte als Ziel die Untersuchung der Wirkung von kurzfristigen Entspannungsübungen auf Buchstabierleistungen von Kindern in den 2. und 6. Klassen. In dieser Untersuchung wurde eine Kontrollgruppe mit Vor- und Nachtest eingesetzt. Es gab eine Versuchs- und eine Kontrollgruppe auf dem Niveau der 2. Klasse, und eine Versuchs- und eine Kontrollgruppe auf dem Niveau der 6. Klasse. Die Versuchsgruppen erhielten Entspannungstraining mit Buchstabierungsunterricht. Kontrollgruppen erhielten kein Entspannungstraining mit Buchstabierungsunterricht. Im Rahmen der Begrenzungen dieser Forschungsarbeit wurden folgende Entschlüsse gefasst: 1) Schüler in der 2. Klasse, die vorher als "gut" oder "schlecht" Buchstabierende identifiziert wurden, können einen Vorteil auf ihrem Klassenniveau erleben; 2) Schüler in der 6. Klasse, die am Anfang als "schlecht" Buchstabierende identifiziert wurden, zeigten größere Verbesserungen im Buchstabieren vom Vortest bis zum Nachtest, als die Schüler in der 6. Klasse, die anfangs als "gut" Buchstabierende identifiziert wurden; 3) Es ist möglich, daß die Buchstabierenden in der 6. Klasse keinen Gewinn erzielen werden, wenn sie dem Entspannungstraining ausgesetzt werden; 4) Kurzfristiges Entspannungstraining (in dieser Untersuchung, 9 Sitzungsperioden) schien, positive Wirkung auf die Buchstabierungsfähigkeit der Kinder auszuüben.

EL PROPOSITO DE ESTE ESTUDIO FUE INVESTIGAR LOS EFECTOS DE

EJERCICIOS DE RELAJACION EN GRUPO DE PERIODOS CORTOS EN LAS CALIFICACIONES DE ORTOGRAFIA DE NINOS SEGUNDO Y SEXTO AÑO. En esta investigación un grupo control de pre-exámen y post-exámen fue utilizado. Un grupo experimental y un grupo control al nivel del segundo año fueron establecidos. Los grupos experimentales fueron dados entrenamiento en relajación con las instrucción de ortografía. A los grupos de control no se les dio el entrenamiento en relajación con las instrucción de ortografía. Dentro de las limitaciones del estudio, las siguientes conclusiones fueron extraídos:

1. Los estudiantes del segundo año con habilidades previamente identificadas "buenas" o "malas" pueden beneficiar de su nivel del año.

2. Los estudiantes del sexto año inicialmente más mejoramiento del pre-exámen a post-exámen que los estudiantes del sexto año que eran identificados inicialmente como "buenos" en la ortografía.

3. El proveer entreamiento de relajación a "buenos" estudiantes de ortografía del sexto grado, tal vez no beneficiará su memoria de las listas escritas de las palabras.

4. El entrenamiento de relajación de períodos cortos (en este estudio, 9 sesiones) parece tener un efecto positivo en la ortografía de los niños.

### A Simplified Body/Mind Model\*

Lee Henn  
and  
Bud Brooksieker

#### Abstract

Each human being is a beautifully integrated mind (body/mind) system. It appears that in our culture, the mind has six major communication channels through which information is inputted into the mind system. Learning how to open these communication channels, and to orchestrate the multi-channel input is an important aspect of suggestive-accelerative teaching.

#### Models of the Mind

We have developed a series of "Models of the Mind" which, in our experience, facilitate understanding ourselves, our world, our interaction with the world, and our interaction with others.

The models are subdivisions of a unified, indivisible whole, the Mind. (Mind, as used in our models, is the entirety of a human being. If you are more comfortable substituting body/mind for mind, do so.) We subdivide not because the mind is subdivided, but rather to facilitate understanding the whole.

The models are mutually inclusive and are interdependent. As a result of being subdivisions of a unified whole, they do contain some seeming paradoxes.

In our use, the models are presented as one part of a series of experiential exercises. The students are requested to know from their own experience.

I hear, and I forget  
I see, and I remember  
I do, and I understand

Ancient Chinese Proverb

While all the caveats appropriate to models and the caveats of subdividing an indivisible whole apply, use of the models seems to facilitate "knowing." In a way, the models are both medium and message.

Our primary models are presented here in brief to provide the reader a gestalt in which to sense the unified whole and how the "Channels of Communication Model" can be used in learning and living.

The mind is a unified, indivisible whole. Our minds--which consist

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\*Paper presented at the 1982 SALT Conference.





of our cells, glands, muscles, bones and brain; our ideas, thoughts and images; our memories, hopes, dreams and wishes; our feelings, emotions and energy field; our spirits and souls--are unified, indivisible wholes.

Each mind is a beautiful, unique whole, a whole that is an integrated system, a system which is a process, and a system which is, itself, in a process as well.

Saying it another way: Each mind is a process called "being" and is in a process of "becoming." We are beings (a process) in the process of becoming what we can and choose to be.



Our mind exists at both a conscious and below-conscious level. Most minds, like most icebergs, are only partially visible to themselves and other minds. Unlike icebergs, our minds can, by altering their state of consciousness, bring a larger portion (if not all) of itself into view; and can also view a larger portion of other minds.

As a unified system, we influence others and are influenced by conscious and below-conscious processes of ourselves and others.



The brain portion of our mind system seems to be an integrated system, as well, consisting of:

- A new brain, fore-brain, or cortical brain
- A mid-brain, emotional brain, or mammalian brain
- A base brain, pons brain, or reptilian brain

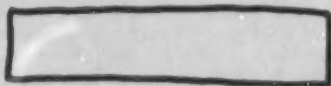
and more, which are inter-related and interactive with the entire mind, hence the O enclosing the portions.

All portions of the brain system influence the body portion of the mind and are in turn influenced by the physical movements of the body

For purposes of this presentation:

- The new brain - deals with communication, conceptualization, abstraction, art, beauty, analysis, science, imagination and "seeing wholes."
- The mid brain - deals with emotions, energy, health and well being.
- The base brain - deals with survival.

portion of the mind system.



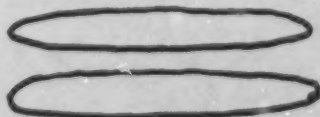
Our sensorium is that portion of our mind system with which we sense our internal and external world. Our sensoria are in potential: vast in the number of senses we possess, sensythesic in terms of being interlinked and cross-linked, tuneable and orchestrateahle, without limits in depth and quality (e.g. perfect pitch, perfumers, etc.), and extendable and contractable.

Common sense and extra sense are included. What is discernible and distinguishable to one mind may be subliminal to another.



We live in an energy world. We are energy beings living in a sea of energy emitted, absorbed, reflected, transformed or transmuted by all things around us. Each mind emits energy (vibes) determined by its own inner and outer states. These energies are a synthesis of the existent images, motives, actions, beliefs, interests, feelings and more.

Each mind receives and is influenced by the energy emitted by others. Enhancing the efficacy of emission and reception is within the realm of the mind.



We have postulated, as well, that the mind enfolds two realities:

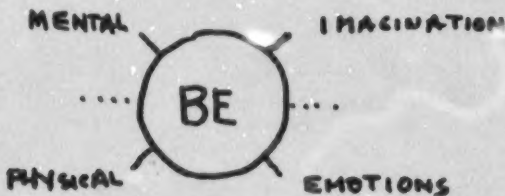
The Hologramatic Reality - Hologram, for short  
and  
The Holoversic Reality - Holoverse, for short

The Hologram is our personal reality constructed from all of our personal experience plus all we have been led to believe from our culture, conditioning, programming, education, etc. When we are in an "ordinary state of consciousness," this is our reality, including who we are, what is "out there" in the real world, and how the world really works. It seems to be the residence of consensus reality, the ego, and more. The more enriched the experience encountered, the more roles, relationships that have been played; the more permissive/inclusive the philosophies, beliefs and teachings, the larger the hologramatic reality seems to be.

The Holoversic Reality is given at birth, partially revealed (all that is essential for survival) but mostly inchoate. The Holoverse is exposed by experience, practice, use, learnings. Where the Hologram is assembled from experience, the Holoverse is exposed by experience. The Holoverse seems to be our best summary of what we are and can be, what the world is and could be, and what we can be and become. The Holoverse is personally unique, yet holds universals. In our culture, the Holoverse traditionally has been contacted through sleep and dreams, fantasy and pretending, meditation, and surrender of the ordinary consciousness.

The last primary model is the "Channels of Communication" model. It seems that in our culture the mind has six major channels through which it communicates to itself and the world and through which the world communicates to the mind, and potentially all levels of the mind.

The channels are:



The two unlabeled channels are: On the left, BREATH, and on the right, ENERGY. These, then, are the primary interdependent, mutually-inclusive "Models of the Mind."



and Suggestive-Accelerative Learning and Teaching

Each of these channels has a language of its own.

The mental channel utilizes words (spoken or written: thoughts, logic, beliefs and concepts. We literally instruct the mental portion of

our mind in these kinds of terms.

The imagination channel, on the other hand, uses pictures, images, gestalts and sensed pictures as its language to communicate.

The language of the physical body is that of movement, tension, posture, actions and proprioceptive and kinesthetic feelings. To communicate via this channel, we need to elicit these kinds of feelings and/or allow these kinds of actions and movements.

The emotional channel, on the other hand, uses feelings, emotions, visceral experiences and our inner "gut level" sensed feelings as its communication language.

The breath channel, of course, utilizes our breath. Our breath can be high or low, rapid or slow, deep or shallow. And, in speaking or moving, it is related to the mental channel and its words or the physical channel and its movement.

Similarly, the energy channel uses our energy in terms of its level (high or low), its frequency (high or low), its direction (inward or outward), its alignment (integrated or disintegrated), its intent (loving or not loving), and its degree of groundedness.

#### Channels to Where and to What?

Fortunately these channels are the same channels to and from the outside world into the mind.

Communication via these channels reaches and impacts the Hologram and the Holoverse through which we "hear-see-feel" from our internal selves, and through which we "express our mind" to the outside world.

From a teacher's point of view then, these seem to be the channels by which we can add on to another's Hologram (and/or elicit in their Holoverse) some new learning and to observe from these channels whether the learning is in place.

#### How Can We Use These Channels?

Learning seems to come best from multi-modal experience and multi-channel input. To take advantage of this, we can then plan and orchestrate learning using all channels of both the teacher/presenter and the student/learner. Communications to these systems to not have to be at a conscious level. All of these systems are communicated to at both a conscious and below-conscious level.

#### Open-Closed Channels

Certain communications tend to open the channels and certain communications tend to close them. In a learning situation, as a general rule, it is desirable to open them.

Terms, phrases and expressions that tend to open the mental channel are: having an open mind, could it be? a positive expectation, maybe?, perhaps? These words tend to open the Hologram to the possibility of an addition to it. On the other hand, inputs into the mental

channel that close the system are: don't believe it, no, any fixed beliefs, always, never, I can't. Telling people what to do tends to close off the channel.

Insofar as the imagination channel is concerned, positive self-images, positive images of the world, beauty, pleasurable scenes, natural and pure symbols, sounds and patterns, a willingness to look and see, flexibility in points of view and perspective open the channel. The imagination channel is closed or limited by things that are ugly, unpleasant, conflicting, negative self-images, negative images of the world and fixed points of view and perspectives.

As you might guess, the physical channel is opened by a flexible body, relaxing, open postures, unhabituated behaviours, and entraining rhythms that are natural to the body itself. Physical channels are closed by being uptight, rigid, inflexible, closed off, habituated in behaviours. Any instructions which limit natural behaviours and rhythms, or utilize an arhythmic entrainment, close off the channel.

In the emotional channels, the predominant need to be satisfied is warmth and security. So, the channel is opened by any warmth, safety, security, fun, joy, pleasure, loving and anything that can be undertaken enthusiastically.

The emotion channel is closed by cold, fear, fright, and attachment to the outcome, rejection, blame and guilt.

Insofar as the breath channel is concerned, that channel is opened by calm, uncontrolled full breath that is naturally responding to the rhythm of the body. Breathing that is uptight, controlled, less than full and arhythmic tends to close off this channel.

With breath and energy it is the students' rapport with the speaker/presenter and the presenter's full, calm breath and grounded, centered, balanced energy that brings that response on the part of the students.

It seems clear that things like laughter, and exuberant joy, open all channels. Statements containing noes, don'ts, prohibitions and pejoratives literally close all channels.

#### Multi-Channel Input and Reception

Two important aspects of teaching are: All teaching is multi-channel whether we plan it that way or not, and all students do not have the same channel preference or skill. These lead to the value of and need for multi-channel planning and orchestration for optimal learning. The specifics on how to achieve multi-channel teaching are unlimited. We would be presumptive to believe we could articulate "the way to do it." So long as the teacher/presenter has his or her own channels open and is honest about the methodology, content, and motive, literally anything will work. In a way, the maxim "all you ever present is yourself," is true.

Our own preference in teaching is to use fun and laughter as the vehicle for learning. We also use playing at, pretending, role playing, acting as if you already know, or acting as if you were skilled, an

expert or a master, as means of opening the channels and eliciting from the students' Holoverse, the knowings that are already there.

We hope these models are of value to you.

UN MODÈLE SIMPLIFIÉ POUR EXPLIQUER LES RAPPORTS ENTRE L'ESPRIT ET LE CORPS. Chaque être humain illustre la perfection d'un système d'harmonie entre l'esprit et le corps. Il paraît que, dans notre culture, l'esprit possède six principales chaînes de communication à travers lesquelles l'information entre dans le système du cerveau. Un aspect important de l'enseignement du type SALT comprend l'apprentissage de l'ouverture de ces chaînes de communication de même que de l'orchestration de l'entrée à chaînes multiples.

EIN VERINFACHTES KÖRPER/GEDÄCHTNIS-MODELL. Jeder Mensch ist ein vortrefflich integriertes Gedächtnis- (Körper/Gedächtnis sechs Hauptkanäle für Kommunikation hat, wodurch Information in das Gedächtnissystem zugeführt wird, line wichtige Seite des suggestiv-beschleunigten Lehrens ist, daß man lernen muß, wie man diese Kommunikationskanäle eröffnet, und wie man die Zufuhr zu diesen verschiedenen Kanälen orchestriert.

UN MODELO SIMPLICADO DEL CUERPO/MENTE. Cada ser humano es un sistema integrado de la mente (cuerpo/ mente). Parece que en nuestra cultura, la mente tiene seis canales de comunicación principales por los cual la información está metida en el sistema de la mente. El aprender como abrir estos canales de comunicación, y orquestrar la entrada de muchos canales es un aspecto importante de la enseñanza sugestiva-acelerada.



**Supermemory of Numbers in a Grade 5/6 Class**

Robert M. Fisher

**Abstract**

The author and teacher describes how the classroom teacher can do applied research using suggestology methods and integrate it with the regular education curriculum. The purpose of this study was to determine if manipulation of the learning classroom environment, based on the principles of suggestology, would increase memory recall capacities. The combined use of music, relaxation and guided imagery proved to be successful in improving the memory and recall of numbers by most students. The greatest improvements were found for the less academically successful students.

**Introduction**

The regular classroom teacher has a lot to offer to the study of learning and suggestology. Teacher-directed research is often limited in its quasi-scientific structure, but it often is much more pragmatic in its design and use for the classroom teacher than the scientific research carried out by academics.

The problem of teacher-directed research in the regular classroom is primarily three-fold: 1) a lack of individual motivation by the teacher, which is mainly due to an academically nonsupportive peer-administrative environment, 2) an apparent lack of time to experience new learning for the teacher to plan and carry out a research project, and 3) a "guilt complex" on the part of the teacher, afraid of wasting time because the research is not integrated with the curriculum content. These are all reasonable problems the author has experienced. However, the author has overcome these through developing and piloting the following supermemory experiment.

After reading some basic inspirational suggestology material such as Ostrander and Schroeder (1980), Schuster et al. (1976); general psychology such as Ornstein (1972), Brain/Mind Bulletin and new sociology of learning, Ferguson, (1980), the author was motivated to explore the uses of relaxation and imagery on himself and with others in his community workshops on suggestology. These powerful experiences the author was able to share with his colleagues and principal in the school, and got some support. This was a very slow process and required a lot of patience.

The next step was to implement the ideas and principles of suggestology in the classroom. The objective of this experiment was to see if relaxation, music and imagery would improve the memory and recall of numbers. It was emphasized to the students that the importance of this specific learning task was not the content, but rather the process of learning how to learn. This was new to them and many students were really excited about learning about themselves.

### Class Setting

The following experiment was carried out while teaching a grade five- and -six class at Reed Ranch School, Olds, Alberta, Canada, during the 1981-82 school year. The class of seventeen students was composed of eleven boys and six girls, ages ten to thirteen, of mixed academic abilities. The school's morning exercise period of approximately twenty minutes was used frequently to practice simple relaxation techniques (e.g., slowed breathing and "shower" of relaxation) informally for four months. Some guided imagery with soft music (Zamfir, Steve Halpern) was conducted sporadically during this time. Students would lie on small carpets on the floor. It was understood by the students that this was a quiet time and no talking was allowed. The basic concepts of left brain (verbal) and right brain (imaginary) were previously explained to the students. The grade-six class had the author as their teacher in the previous year and had completed a drawing course based on the different perceptions of the left and right hemispheres of the brain (Edwards, 1979).

### Procedures

On March 11, 1982, each student filled out a data record sheet. This sheet kept a record of dates, number of correct responses for the different memory levels and the treatment situation. To aid in motivation for the experiment, the students could fill in any name. Most students would pick a name of someone they would like to be. After describing the format of the experiment and the need for accuracy in data recording, the students were informed that they would eventually be asked to hand in a report on the entire study which would be a part of their science mark.

The pretests were done on March 11, 18, and 19, during the early morning exercises (0900-0920 hrs.). The pretest consisted of the following: 1) students sitting at their own desk, 2) no advice was given for memory strategies, 3) a set of three randomly chosen numbers at memory level 5 (this means five digits in the number, e.g., 56843) were put up on an overhead projector sequentially. The students would be allowed a couple of seconds to watch the number being written and four or five seconds to memorize it. The number was covered on the overhead and the students would be asked to keep the number in their minds for another four or five seconds. Upon the teacher giving them a signal, they would write down the number. After the three numbers were finished at the particular memory level, the numbers on the overhead were uncovered for the students to correct their own papers as quietly as possible. They would then fill in their own data sheets by filling in the number of correct answers they had out of three for the particular memory level.

The pretest session would continue with this procedure until memory level 11 was completed. At memory levels 9, 10, and 11, the time for memorization was doubled. On subsequent pretest days, the students were asked not to look at their previous scores while being tested. This would avoid the student's imposing self-limitations at the difficult memory levels.

The posttests took place on March 25, April 20, and April 27, 1982. This stretching out of the posttest days was done to avoid the influence

of practice as the causal variable for improved memory. The exact same procedures were followed as in the pretests except that there was an extra ten-minute relaxation period given prior to testing. The relaxation period consisted of the following: 1) the students' taking their place on the floor with a carpet, 2) doing some deep, cleansing breaths, and 3) relaxing body tension with suggestions from the author and listening to soft music. A brief guided imagery was done in which the students were asked to see single digits that the author would call out. The students were told about their mind's eye and its power for memory. The music for the first relaxation period was baroque (SuperLearning, Inc., 1979). Zamfir's Pan-pipe music (*Ete d'Amour* from the *Lonely Shepherd* tape) was used on the last two tests. No music was played during the testing. The total time for testing was 25-30 minutes.

## Results

As expected, general accuracy of memory and recall decreased increasing memory levels; see Fig. 1. On the average, the grade-six class performed better throughout the experiment, except at memory level 11. Posttest results were higher than pretest levels for both grades at all memory levels.

Pretest-posttest differences for the grade-five class were of minor significance for memory levels 6 to 9 inclusive (mean accuracy increase of 7.2%-range 6-10%). At memory levels 10 and 11, there was a sharp mean increase in pretest-posttest differences. For level 10, there was a 24% accuracy increase. For level 11, there was a 28% accuracy increase. One boy in grade five, a quiet introverted type, went from zero accuracy on his pretest to 67% mean accuracy on the posttests for memory levels 10 and 11.

Pretest-posttest differences for the grade-six class were of minor significance at memory level 6 (mean was 3%) but increased substantially to 19% for levels 7 to 9 inclusive. The mean accuracy difference fell to 10% for memory levels 10 and 11. The most dramatic result in grade six came from a boy who is a slow reader and has had learning difficulties since grade one. His mean pretest-posttest difference went from 20 to 80% accuracy at memory level 9, 50 to 67% at level 10 and a spectacular 17 to 80% at memory level 11.

On the whole, the students were excited during the experiment, apart from the last few posttest days when motivation was apparently lower than previous testing periods. Several students pointed out that they preferred the Zamfir music to the baroque for relaxing and imaging. Final results were tabulated as a class with the better math students doing computations of means. The author then helped the students write up the experiment in scientific format. Time was made available for students to share their results with others. Students were encouraged to take their papers home and show their parents the results.

## Discussion

Many authors have written about the results of their research in suggestology and the methods of suggestology. Relaxation, music and guided imagery are well documented in producing improved learning,

whatever the theoretical reasons may be. This study shows more supportive evidence of the enhanced memory with these techniques of suggestology.

The relatively greater success of this experiment with the grade-six class is likely due to maturity and more experience in working with the author the previous year. There is some indication that the relaxation treatment was more effective at the more difficult memory levels. For the grade-six class, this was not so at levels 10 and 11. One plausible explanation is that they had lost considerable motivation by the end of the session. Another statistical explanation is that one girl with high anxiety levels about learning pulled the mean accuracy score down disproportionately for levels 10 and 11.

The relative effectiveness of the treatment varies with different students more than was expected. Out of 17 students, only two girls had poorer success on the posttests than on the pretests for more than one memory level. Interestingly, both of these girls would be classified as top students for normal classroom academic subjects but minimal-pass students in physical education due to lack of coordination and self-confidence. The highest success was with boys in general. The two boys discussed earlier would be labeled as academically minimal-pass students and are very good in physical education. Another grade-six boy, who has great difficulties academically, proved to have the best memory skills in the class and for the first time in his schooling, he achieved the highest success in the class. He could memorize (visually) twelve and thirteen digits by the procedure used here.

### Conclusion

The combined treatment of soft music, relaxation and guided imagery, even on a limited basis, is significantly effective in improving the memory and recall of numbers for grade-five and -six students. The results of this study are limited to a small sample size and possible cheating errors. However, further studies are needed to look at the relationship between sex-visualization/ memory/recall abilities and physical coordination/maturity.

The teacher can contribute to the learning research field by doing classroom studies. Teachers also need to be made aware of the absolute necessity to approach learning in the classroom with a diversity of strategies and techniques that tap the various brain hemispheres and states of consciousness of the students. Suggestology in brief is a method of altering normal consciousness in the learner so they can utilize hidden mental resources to accelerate learning. Thomas Roberts (Anon., 1982), Professor of Education and Consciousness Studies at Northern Illinois University, put it well when he said, "Overlooking the variety of states of human consciousness is the major educational fallacy of our time."

Using techniques of learning such as suggestology, on the main part, helps those students who do not fit into the traditional learning styles of most of our schools. This again emphasizes the need for teachers and curriculum planners to be aware of the diversity of approaches to learning that need to be taken. One warning for teachers thinking of using suggestology techniques is that they experience it themselves first. The author is certain that the results of this study would be

much different if he lacked confidence in its potential.

### Acknowledgements

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L'APPRENTISSAGE ACCÉLÉRÉ DES CHIFFRES DANS UNE CLASSE DE SIXIÈME/SEPTIÈME. L'auteur-instituteur décrit comment on peut faire des recherches tout en utilisant la suggestologie et en intégrant cette méthodologie dans le programme d'études. Le but de cette étude était de déterminer si la manipulation de l'environnement de l'apprenant (basée sur les principes de la suggestologie) pourrait augmenter la mémorisation et la rétention du matériel. Une combinaison de la musique, des exercices de relaxation et des rêves éveillés dirigés réussit à améliorer la mémorisation et la rétention des chiffres de la part des étudiants. Les plus grands progrès furent réalisés par les étudiants moyens ou faibles.

SUPERERINNERUNGSVERMÖGEN VON NUMMERN IN EINER 5./6. KLASSE. Der Autor und Lehrer beschreibt, wie der Schullehrer angewandte Forschung ausführen kann, wie er suggestopädische Methoden verwenden und in den gewöhnlichen Lehrplan integrieren kann. Dieser Versuch zielte darauf hin, zu bestimmen, ob die auf den Prinzipien der Suggestopädie basierte Manipulation die Erinnerungsvermögenskapazitäten steigern würde. Die Gesamtwirkung von Musik, Entspannung und gelenkter Bildformulierung bewies sich bei den meisten Schülern erfolgreich, in gesteigertem Erinnerungsvermögen sowohl als auch in gesteigerter Erinnerung von Nummern.

SUPERMEMORIA DE LOS NUMEROS EN UNA CLASE DE QUINTO Y SEXTO AÑO. El autor y maestro describe como el profesor puede aplicar la investigación sobre los métodos de "suggestologia" e integrarlos con el curriculum normal de educación. El propósito de este estudio fue determinar si la manipulación del ambiente del salón de clase en una forma que estaría basada en los principios de "suggestology," aumentaría la capacidad de recordar. El uso combinado de música, relajación y viajes de la imaginación resultó en la mejora de la memoria y la habilidad de recordar en la mayoría de los estudiantes. Las mejoras mas

significantes se dieron entre los estudiantes que antes habian sido menos académicos.



**The Relationship Between the Use of  
Fantasy Journeys and Creativity\***

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and  
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**Abstract**

The study was designed to provide initial data regarding the research question: Is there a relationship between the use of fantasy journeys in the classroom and students' scores on a measure of creative thinking? Three seventh-grade classes were randomly assigned to one of three groups. Group 1 received no treatment prior to the administration of the Torrance Test of Creative Thinking; group 2 experienced one fantasy journey prior to the administration of the TTCT; group 3 experienced five fantasy journeys (one per day) prior to the administration of the TTCT. An ANOVA was calculated for group TTCT mean scores. The results indicated that the groups experiencing fantasy journeys received significantly ( $p < .05$ ) higher scores on the TTCT than the control group. Groups two and three did not significantly differ from one another. Conclusions and suggestions for further research are offered.

**Introduction**

In today's world, scientists, psychologists and educators are becoming increasingly concerned with the need for developing a creative society. The term "creativity" no longer applies just to the poet, novelist, playwright or artist.

The importance of imagination and its relationship to creativity is found in a statement by Mitchell:

By the year 2000, social scientists tell us that the world will be faced with famine, lack of oxygen, extensive pollution, and mass overcrowding. Multitudes of new jobs, ever-increasing change, and other factors all bear testimony to the need for developing creative potential. For if tomorrow's person is to survive such a changeable milieu, it would appear necessary that such creative problem-solving skills certainly should be developed to their fullest in order to merely survive. (Mitchell, 1975, p.37)

Our way of life can only be maintained, improved and strengthened by a society which fosters creativity. It must provide an individual

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\*Portions of this paper were presented at the annual meeting of the American Educational Research Association, New York, March, 1982.

with the opportunity to experience its many facets, and from which one may select what one desires. Society must encourage openness to internal and external experiences. This type of society has to be well balanced and integrated with no fear of criticism. It must encourage change and uniqueness.

Creativity involves not only originality and imagination, but also values, unique meanings and new interpretations. Techniques used to develop the multiple meanings involving creativity would include fantasy and free associations, developing the use of intuition and subconscious thought.

Techniques such as fantasy and free association would add new dimensions to problem solving in a more creative manner through new insight into the problem and its reformulation. Seeing irregularities and similarities in problems would help to develop unique solutions to problems using creative thought processes. Learning to let the mind wander and ponder is the key to intellectual creative thinking. The term "creativity" must never be confined by definitions.

Notice should be taken of the mounting research involving the study of the brain and how it functions. Much as been written about right- and left-brain learning (Ornstein, 1977; Samples, 1975). Educators are becoming more aware and interested in the right- and left-brain theories. It is suggested that fantasy is a right-brain function:

Psychologists are finding that our brain works in at least two fashions. The left hemisphere is calculating, linear, and uses language formulas and mathlike symbols. The right hemisphere is better at visual, spatial knowledge; thinking in images and pictures, and perhaps is even in contact with the unconscious and intuition. By providing fantasies and our usual verbal information, we give students experience in combining these two modes of thinking and knowing. (Hendricks & Roberts, 1977, p. 48)

This interest in brain hemispheric specialization springs from the growing concern for educational systems to develop methods of stimulating and increasing creative potential of students. Facilitation of creativity within the educational systems would create a society that is capable of solving problems of the future (Rogers, 1954):

"There are many reasons to be skeptical about magic pedagogical keys to creativity, but it is clear that all too often schools seem to stop the flow of children's original and creative expression" (Weininger, 1977, p. 118).

Singer (1979) states that "the world of inner experience" is an important emotional and intellectual resource and is tapped in daydreaming, a form of fantasy. "It should be cultivated rather than disparaged." He says the ability to "make believe is a forerunner of broader creative abilities" (p. 22).

Singer (1979) goes on to say that "daydreaming facilitates such a variety of mental activities and it serves man's need for stimulation and adaptation" (p.22). The question is, how do we facilitate this quality through educational practices?

There is a great wealth of theoretical material suggesting that fantasy journeys do develop and increase creativity. However, there is no empirical evidence supporting this premise.

Roberts and Clark (1975) suggest, "guided fantasy offers the possibility of engaging the right half of the brain in the learning process" (p. 13). Clark (1976) indicates that students can become more creative through fantasy journeys because there are several modalities at work using this technique. Students hear, see, smell, touch, and feel through the imagery of the fantasy journey. In this manner, students with differing learning techniques can learn in a manner suited to their special needs.

Incorporating right-brain activities into educational systems is not a simple matter. The reason for the difficulty in using fantasy journeys in the classroom, according to Wittmer, Loesch and Seiler (1978), has to do with the pressures society puts on the need to be productive in school and at home. Daydreaming is a waste of one's time in the opinion of many people.

Aldous Huxley (1962) comments about the need for educational systems to give unfilled time in order that creativity has a chance to grow. Students need time to let ideas and thoughts come naturally into their heads. Freedom to think and let the mind wander is the only way "for the subliminal mind to do its work."

Besides allowing the mind to be creative, fantasy journeys can also be used to collect knowledge. According to Mills and Scher (1973), "Even learning the content of scientific knowledge is enhanced by the (usually implicit) use of affective processes such as fantasy and imagery" (p. 337).

Rogers (1954) suggests that our educational systems are a problem. Instead of developing creative individuals, these systems are creating carbon copy robots which do not freely create or have any original or unique thoughts and ideas.

To eliminate this type of educational problem and avoid the future problems suggested by Rogers, Wittmer, Loesch and Seiler (1978) state that "fantasizing is one of our most useful and powerful faculties. Through the ages, persons have claimed that human potential is only as limited as imagination" (p. 72).

As can be seen in the preceding review, there is adequate theoretical support for posing the following research question: Is there a relationship between the use of fantasy journeys in the classroom and students' scores on a measure of creative thinking?

The empirical support for this question is lacking. At this point, there are basically only hypotheses regarding the use of fantasy journeys to facilitate creativity in students. This study provides initial data on the possibility of the existence of such a relationship.

#### **Procedure**

**Subjects.** The sample consisted of three seventh-grade Language Arts classes. Students were randomly assigned to classes. The group

sizes were as follows: group one (n=19), group two (n=22), and group three (n=15).

Each group received one of two treatments, except for the control group. The groups were randomly assigned to treatments. Group one (control) was given no exposure to fantasy journeys. Group two was given one fantasy journey (see Appendix A), and group three was given five fantasy journeys (see Appendices B through F), one each day for a week. The treatments were arranged so that the second group had exposure to a fantasy journey on the same day that the third group completed the fifth fantasy journey. Before each fantasy journey, a relaxation exercise was administered (see Appendix G). All three groups responded to a creativity measure on the same day.

None of the children used in the study were told that they would be involved in a study. The fantasy journeys and the creativity measure were incorporated into the regular classroom activities.

Instrumentation. The measure of creative thinking was Activities 1, 2, 3, and 7 from the Torrance Test of Creative Thinking. (TTCT). These activities were chosen after communication with the author (Torrance, 1980). Torrance suggested that Activities 1, 2, 3, and 7 would be a valid creativity measurement. This shortened version of the TTCT was used due to restrictions regarding classroom time needed for test administration.

The measure was scored following the scoring procedures outlined in the Directions Manual and Scoring Guide for the Torrance Test of Creative Thinking (Torrance, 1966). Three scores were derived from each student's responses. The three scores were:

FLUENCY--determined by counting the number of different consequences listed. No credit was given for inappropriate responses such as one that merely restated the same condition, only in other words, and other responses which had no special relevance to the improbable situation or described conditions which already existed and would not have been caused by the improbable condition.

FLEXIBILITY--defined as a change or shift in attitude or focus.

ORIGINALITY--judged primarily by the rarity of the response. Obvious responses, responses requiring little or no mental leap from the stimulus, however, were not considered original, in spite of rarity. The three scores for each student were combined to generate a total score. The average total score for each group was calculated.

Scoring. To check the accuracy of the scores obtained from the TTCT (Torrance, 1966), the senior researcher and one other person scored the tests independently. Both scorers followed the procedure as outlined in the Torrance Test of Creative Thinking: Directions Manual and Scoring Guide--Verbal Test Booklet A. The researcher and the other scorer did study the manual together and did use one of the tests as a scoring example. Both scorers were graduate students who had previously taught seventh grade, but the scorers had never met until meeting to go study the Torrance Test of Creative Thinking: Directions and Scoring Guide--Verbal Test Booklet A (1966).

Neither scorer saw the other's scoring results. The scores were then computed and sent to an independent analyst. The analyst then calculated the scores' inter-rater reliability correlation coefficients.

Table 1 illustrates the inter-rater reliability correlation coefficients obtained on each of the four tasks, Activities 1, 2, 3, and 7, of the creativity measure, along with the total scores across the four activities. The correlations indicate that the inter-rater reliability coefficients are strong and acceptable.

Table 1

Inter-Rater Reliability Coefficients

| Tasks  | 1   | 2   | 3   | 7   | Total |
|--------|-----|-----|-----|-----|-------|
| Scores | .71 | .90 | .81 | .94 | .93   |

Results.

The mean scores on the TTCT were computed for three groups. Table 2 shows the mean scores and standard deviations obtained by each treatment group on the creativity measure.

Table 2

Subjects' Mean Scores and Standard Deviations on the Creativity Measure

| Group | n  | Mean  | S.D.  |
|-------|----|-------|-------|
| 1     | 19 | 31.79 | 10.43 |
| 2     | 22 | 56.05 | 25.43 |
| 3     | 13 | 47.53 | 17.47 |

Table 3 illustrates a one-way analysis of variance computed to determine significant differences ( $p < .05$ ,  $df = 1$ ,  $F = 13.14$ ) between groups. The ANOVA indicates that there was a significant difference.

Table 3

Analysis of Variance

| Source                | df | SS      | MS      | F    | FP     |
|-----------------------|----|---------|---------|------|--------|
| Source                | 2  | 6080.80 | 3040.04 | 8.06 | .0009  |
| Linear                | 1  | 1121.15 | 1121.15 | 2.97 | .0906  |
| Deviation from Linear | 1  | 4958.93 | 4958.93 | 13.1 | .0006* |

In order to determine where the significant difference occurred between the three groups, a post hoc test of significant differences, Tukey-honestly significant difference procedure, was used (Winer, 1971). This procedure showed that there were significant differences ( $p < .05$ ) between group one (control group), group two (one fantasy journey) and group three (five fantasy journeys).

Group one differed significantly from groups two and three, but there was no significant difference between groups two and three. Therefore, groups receiving fantasy journeys obtained significantly higher scores on the TTCT than did the control group. The results indicate that the use of a fantasy journey did increase creative production as measured by the TTCT.

The results also indicated that no significant differences were found between the creativity scores of group two (one fantasy journey) and group three (five fantasy journeys). The number of fantasy journeys administered to students was not significantly related to the students' creativity scores.

### Conclusions and Discussion

This study was designed to provide data regarding the research question: Is there a relationship between the use of fantasy journeys in the classroom and students' scores on a measure of creative thinking? The data support the following conclusions:

1. The use of fantasy journeys as a classroom technique was related to differences in group creativity scores.
2. There was a significant difference between group one, the control group, and groups two and three which were exposed to varying amounts of fantasy journeys.
3. Group three, with five fantasy journey exposures, did not show a significant difference from that of group two exposed to one fantasy journey.
4. Group two, with one fantasy journey exposure, did score slightly higher, although not significantly, than group three, exposed to five fantasy journeys.

There may be several reasons for this particular outcome of the study. The following are some possible explanations:

1. The group exposed to five fantasy journeys may have become habituated with daily treatments, while the group exposed to one fantasy journey found the experience novel and unique.
2. The time of day may have been a factor. Group one was the second hour of the school day. Group two was right before lunch, and group three was directly after the lunch break.
3. None of the students were aware that they were involved in this study. The lesson plans leading up to the creativity measure were all different in order to give time in each group for the treatments prior to the creativity measure. These plans may have confused the groups because the creativity measure was either too abrupt a change, or it was more refreshing, depending upon the week's work for each group.
5. Teacher and student interaction during the week of the study could have influenced how the creativity measure was received and accepted by the students. If there had been discipline problems, for example, a group's reception may not have been favorable to the



measure. If things went smoothly during the week, a group's reception to the creativity measure would probably be favorable.

This research was conducted as a basic foundation for further research dealing with the use of fantasy journeys as a classroom technique for developing and improving the creative potential of students of all ages and abilities.

Because of the limitations of this study, there are many avenues open for further study. This study dealt with only two treatments over a limited amount of time. In addition, the grade level was limited to seventh grade, in a specific area and school.

Areas needing further study involving increased creativity through fantasy journey techniques include the following questions:

1. What would be the results of a similar study involving many schools and geographical areas of the country?
2. How often should fantasy journeys be used to be most beneficial for developing creative production?
3. When should fantasy journey exposure begin as part of the school curriculum?
4. Do fantasy journeys increase self-awareness and help to build positive self-image?
5. Is the classroom use of fantasy journeys related to other educational outcomes?

All of these areas are certainly worthy of further study. From further, more in-depth studies involving fantasy journeys, educational practices may be influenced to some degree so that more techniques can be developed to facilitate creativity in students.

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#### Appendix A Group Two - Fantasy Journey

Put a light bulb in your left hand...Hold it out in front of you...Very good. Now we are going to ask the light bulb to do whatever it is that we wish it to do. You may have to wish very hard for the light bulb to get your message, but let's try it and see if the light bulb will do what we desire it to do...Wish for the light bulb to turn on...Is it on?...Turn it off...Now let's have the light bulb shine different colors. What color do you desire? Red? Green? Blue? Orange? Is there any other color that you desire?...Would you rather the bulb shine warm or cold?...Take your choice and have the light bulb shine the way you want it to....Do you feel the temperature changing in the room?...Put the light bulb aside....

Get another light bulb and unscrew the bottom of it...Take the bottom and pour in some fly spray...Screw the bottom back on...Hold it out in front of you and wish for it to start shining...As it shines, have it kill all of the flies...Now make the light bulb bigger and flat like a television tube...Blink your eyes and have a program come on...Blink your eyes and change the picture to another program...Blink them again for another program. Now blink your eyes and have the "Next Saturday Program" come on...Are you going to be happy next Saturday?...Blink your eyes and turn off the TV....

Take another light bulb...make it about half as big as it is now...Let's pretend that it is a magic flashlight...Shine it at a cat and make the cat as small as a mouse...Shine it on a mouse and make the mouse as big as a cat...Have the mouse chase the cat...Shine it on the dog and have the dog meow like a cat...Shine it on a bird and have the bird bark like a dog...Shine it on a cow and have the cow grunt like a pig...Shine it on a pig and have the pig sing like a bird...Put your magic light bulb on the shelf....

Now put a light bulb in each hand...Hold your arms out straight to

the side...Pretend that your light bulbs are jet engines and run down the street for a take-off...Higher...Circle over your house...Look down...Do you see anyone you know?...Now zoom over town and look down...Do you see any stores?...Zoom away from town and look down at the river...zoom away and look at the mountains...Look at the ocean...Zoom back toward home...When you are over your house let loose of the light bulbs and have them zip away into space...Open your parachute and float slowly to the ground...As you float down, look all around you...You are heading toward your backyard...Touch your feet down, take off your parachute, and go tell people that you are home. (Eberle, 1977), pp. 45-47)

#### Appendix B

##### Group Three - Fantasy Journey (Day One)

Pretend that you have a cardboard box about as big as a chair...Set it on the floor in front of you...Make it whatever size you want it to be...Make the box bigger and change the color...

Now we are going to pretend that we are putting some things into the box. Think about the many different kinds of good things you could put into the box...Put them in...Keep putting things into the box until it is full...Now pile things on top...Keep piling things on top...Do you have things piled high?...Now, like magic, make everything in the box go away...Is the box empty?...

Take a long, flat box and put some wheels on it...Make it into a wagon...Have it be a red wagon...Jump into your red wagon and steer it as it zips around the room...Stop the wagon and get out...Push it out the door....

Are you ready to make something else?...Take another box and make a doghouse...Put a dog in the doghouse...Make him with long hair...Give him a name...Call out his name and have him bark three times...Pet him and tell him he is a good dog...Give him some food and tell him goodbye.

Now take a wide, tall box and make a refrigerator...Put a door with hinges on it...Open the door...Did the light come on?...Put some shelves in the refrigerator...Put different kinds of fruit on the shelf...Put different kinds of vegetables on the shelf...Look at all the food in the refrigerator and decide what you are going to have for lunch...Shut the door and come back later when you're ready to fix lunch.

Get another box and we will make a space ship...Put a door and some windows in it...Get into your space ship and shut the door...Get a little box and make a control panel with lights on it...Get another box and make a seat...Sit down in your seat and buckle the belt...Are you ready to go?...Grab the controls and push the button that starts the engines....Count down, 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 - ignition, blast off...Look out the window...Is the earth getting smaller?...Unbuckle your belt and float around the cabin...Snap the safety cord onto your space suit, open the cabin door and step out into space...Take a walk around out in space...Now grasp the safety cord and pull yourself back into the cabin...Fly your space ship around the moon...Take one more turn around the moon and head back to

earth...Start to slow down for a landing...Set your space ship down easy...Get out and walk around...Doesn't it feel good to be back on earth?...

You can do all sorts of things with a cardboard box...if you use your imagination. (Eberle, 1977), pp. 19-20)

#### Appendix C

##### Group Three - Fantasy Journey (Day Two)

Imagine that you are skindiving in a tropical sea near the shore. Listen to all the sounds that you hear, and look around to see what is making each sound in your undersea world...Swim around in this undersea world and explore it...What is it like?...And how do you feel about being there? What do you see?...And what can you feel with your hands and skin?...Explore some more, and discover more about this experience of being a skindiver....

Just ahead, you can see the opening of an undersea cave. As you swim toward it, you can see it is quite large and deep. There is something hidden in the back of the cave, where the light is very dim and it's difficult for you to see. Slowly explore this cave and see what you discover when you come to the back of it...When you find something, look at it carefully and see what it is like...How do you feel toward it?...Now talk to it, and imagine that it can reply...What do you say to it?...And what does it answer?...Tell it how you feel toward it...Now switch places. Become the thing in the cave and continue the conversation...How do you feel as this thing?...Look at the skindiver in the cave with you...How do you feel toward the skindiver and what do you say to him?...What else is going on between you as you talk?...Switch places whenever you wish, and continue to interact and speak with each other for a while. (Stevens, 1971, p. 176)

#### Appendix D

##### Group Three - Fantasy Journey (Day Three)

Now I'd like you to imagine that you are a rosebush. Become a rosebush, and discover what it is like to be this rosebush...Just let your fantasy develop on its own and see what you can discover about being a rosebush...What kind of rosebush are you?...Where are you growing?...What are your roots like?...And what kind of ground are you rooted in?...See if you can feel your roots going down into the ground...What are your stems and branches like?...Discover all the details of being this rosebush...Continue to discover even more details about your existence as this rosebush, how you feel about your life...and what happens to you...Let your fantasy continue for a while.... (Stevens, 1971, pp. 43-44)

#### Appendix E

##### Group Three - Fantasy Journey (Day Four)

Now I'd like you to imagine that you are a tree stump in the mountains. Become this tree stump. Visualize yourself and your surroundings...Take some time to get the feel of being a tree stump...It might help to describe yourself. What kind of a stump are you?...What is your shape?...What kind of bark and roots do you have?...Try to get into the experience of being this tree stump...What is your existence as

a tree stump?...What kinds of things happen to you as this stump?...

Fairly near this stump there is a cabin. I'd like you now to become this cabin...And again, I'd like you to get the flavor of the experience of being this cabin...What are you like?...What are your characteristics?...Explore your existence as a cabin...What do you have inside you, and what happens to you? Take some time to get in touch with being a cabin...

Near this cabin, there is a stream. I'd like you now to become this stream. As a stream, what kind of existence do you have?...What kind of a stream are you?...How do you feel as a stream?...What kinds of experiences do you have as a stream?...What are your surroundings like?...

As this stream, I would like you to talk to the cabin. What do you say to the cabin?...Talk to the cabin and imagine that the cabin answers back, so that you have a dialogue, a conversation...As this stream, what do you say to this cabin and what does the cabin answer back?...Now become the cabin again and continue the conversation. What do you have to say to the stream?...Continue this dialogue for a while...(You can also have dialogues between the stump and cabin, or between the stump and the stream)... (Stevens, 1971, p. 157)

#### Appendix F

##### Group Three - Fantasy Journey (Day Five)

I want you to imagine that you are walking up a trail in the mountains at night. There is a full moon which lets you see the trail easily, and you can also see quite a lot of your surroundings...What is the trail like?...What else can you see around you?...Just ahead there is a small side trail that leads up higher to a cave that is the home of a very wise man who can tell you the answer to any question. Turn off onto this side trail and walk toward the wise man's cave...Notice how your surroundings change as you move up this trail and come closer to his cave....

When you arrive at the cave, you will see a small campfire in front of the cave, and you will be able to faintly see the silent wise man by the light of the dancing flames of the fire...Go up to the fire, put some more wood on it, and sit quietly...As the fire burns more brightly you will be able to see the wise man more clearly. Take some time to really become aware of him--his clothes, his body, his face, his eyes....

Now ask the wise man some question that is important to you. As you ask this question, continue to watch the wise man, and see how he reacts to what you say. He might answer you with words alone, or he might also answer you with a gesture or facial expression, or he might show you something...What kind of answer does he give you?...

Now become the wise man...What is your existence like as this wise man?...How do you feel, and what is your life like?...What is your attitude toward this visitor?...What do you say to your visitor--whether in words, gestures or actions?...

Become yourself again and continue this dialogue with the wise man.

Do you understand what he is saying to you?...Do you have any other questions to ask him?...How do you feel toward the wise man?...

Now become the wise man again, and continue this conversation...Is there anything else you can say to your visitor?...

Become yourself again. You will soon have to say goodbye to the wise man...Say anything else you want to before you leave...Just as you are about to say goodbye to the wise man, he turns and reaches into an old leather bag behind him, and searches in the bag for something very special to give to you...He takes it out of the bag and gives it to you to take home with you...Look at the gift he gives you...How do you feel toward the wise man now?...Tell him how you feel...and slowly say goodbye to him....

Now turn away, and start walking back down the mountain trail, carrying your gift with you...As you walk back down the trail, look at the trail carefully, so that you will remember how to find your way back to the wise man when you want to visit him again...Be aware of your surroundings and how you feel....

Now keep your eyes closed, and bring your gift with you as you return to this room...Take some time now to examine this gift in more detail...What did he give you? Really discover more about it...Touch it...Smell it...Turn it over in your hands and look at it carefully...

Now become this gift. Identify with it and describe yourself. What are you like as this gift?...How do you feel as this thing?...What are your qualities?...What do you do, or how can you be used or appreciated?

Now become yourself again and look at the gift and see if you can discover even more about it...Do you notice any change in it, or anything that you didn't notice before?...Now put this gift away carefully and safely in your memory...and say goodbye to it for now.... (Stevens, 1971, pp. 183-185)

#### Appendix G Preparation Prior to Fantasy Journey

Find a comfortable position, lying on your back, if possible. Close your eyes and become aware of your body...Turn your attention away from outside events and notice what is going on inside you...Notice any discomfort, and see if you can find a more comfortable position...Notice what parts of your body emerge into your awareness...and which parts of your body seem vague and far away...If you become aware of a tense area of your body, see if you can let go of the tension...If not, try deliberately tensing that part, to see which muscles you are tensing...and then let go again...Now focus your attention on your breathing...Become aware of all the details of your breathing...Feel the air move in through your nose or mouth...Feel it move down your throat...and feel your chest and belly move as you breathe...Now imagine that your breathing is like gentle waves on the shore, and that each wave slowly washes some tension out of your body...and releases you even more.... (Stevens, 1971, p. 43)



LE RAPPORT ENTRE LE RÊVE ÉVEILLÉ DIRIGÉ ET LA CRÉATIVITÉ. Le but de cette étude fut d'examiner la question suivante: existe-t-il un rapport entre l'emploi du rêve éveillé dirigé dans la salle de classe et la pensée créatrice des étudiants telle que mesurée par certains tests? Trois classes de cinquième furent assignées au hasard à un des trois groupes. Le premier groupe ne reçut aucun traitement avant de passer le test Torrance de pensée créatrice (TTCT) le deuxième groupe eut l'expérience d'un seul rêve éveillé dirigé avant de passer le TTCT; le troisième groupe eut l'expérience de cinq rêves éveillés dirigés (dont un par jour) avant de passer le TTCT. On calcula un ANOVA pour le moyen des scores du groupe en ce qui concerna le TTCT. D'après les résultats, les groupes qui avaient eu l'expérience de rêves éveillés dirigés reçurent des scores nettement plus élevés ( $p < .05$ ) au TTCT que le groupe de contrôle. Il n'y eut aucune différence significative entre les groupes deux et trois. On conclut ce rapport en présentant des suggestions pour de futures recherches dans ce domaine.

DIE BEZIEHUNG ZWISCHEN DEM GEBRAUCH VON PHANTASIE-REISEN UND KREATIVITÄT. Diese wissenschaftliche Arbeit beabsichtigte, Anfangsdaten über die Forschungsfrage zu geben: Gibt es eine Beziehung zwischen dem Gebrauch von Phantasie-Reisen im Unterricht und den Ergebnissen bei einer Messung von kreativem Denken? Drei Klassen im 7. Jahrgang sind zufallsmäßig in drei Gruppen geteilt. Gruppe 1 bekam keine Behandlung vor der Ablegung des Torrance Test of Creative Thinking (Torrance Test des kreativen Denkens) (TTCT); Gruppe 2 erfuhr eine Phantasie-Reise vor der Ablegung des TTCT; Gruppe 3 erfuhr fünf Phantasie-Reisen (eine pro Tag) vor der Ablegung des TTCT. Ein ANOVA wurde berechnet, um den Mittelwert für die Gruppen-TTCT zu finden. Die Resultate deuten darauf hin, daß die Gruppen, welche die Phantasie-Reisen erfahren haben, beträchtlich höhere ( $p < .05$ ) Ergebnisse bei dem TTCT erreicht haben, als die Kontrollgruppe. Gruppen 2 und 3 waren nicht bedeutungsvoll voneinander verschieden. Ergebnisse und Vorschläge zur weiteren Forschung sind vorgelegt.

LA RELACION ENTRE EL USO DE VIAJES DE FANTASIA Y LA CREATIVIDAD. El estudio fue designado para probar el dato sobre la pregunta de investigación: Hay una relacion entre el uso de viajes de fantasia en el salón de clases y las calificaciones de la creatividad de los estudiantes? Tres clases de séptimo grado fueron asignados al azar a uno de tres grupos. El grupo uno no recibió ningún tratamiento antes de tomar el examen Torrance de Pensamiento Creativo (TTCT). El grupo dos experimentó un viaje de la fantasia antes de tomar el TTCT; el grupo tres experimentó cinco viajes (uno por día) antes de tomar el examen. Se calculó un ANOVA para las calificaciones del TTCT. Los resultados indicaron que los grupos que experimentaron los viajes de fantasia recibieron calificaciones significativamente mas altas ( $p < .05$ ) que el grupo de control. Los grupos dos y tres no se diferieron significativamente el uno del otro. Conclusiones y sugerencias para mas investigación se ofrecen.

**SALT and the World of Ideas\***

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**Abstract**

The author presents the learning problems one encounters in a university level foreign language literature class in which the substance is concepts and ideas rather than skills or factual knowledge where the majority of work with SALT has been conducted. Application of the principles of SALT in such a class is explained, and specific examples are presented.

**Introduction**

Recently a student was in my office, and we were talking about why she had not continued her language study beyond the intermediate level, specifically why she had not taken a literature class. Her comment was, "I guess I'm afraid of that. I don't know if I can handle that." Further discussion revealed that the "that" of her remark was not the skills required for the class, i.e., reading, speaking, and listening skills, rather it was the substance of such a class which worried her. She was afraid of the ideas and the concepts she expected to encounter.

This scenario is repeated in many different ways in formal education in those areas where one goes beyond skills acquisition. There is, for example, a tendency on the part of many students to avoid disciplines considered to be intellectually rigorous such as philosophy, literature, or physics. One can also often notice a student retreating mentally when a discussion begins in which ideas and concepts are being considered. In addition, there is the situation of the student who simply cannot think, i.e., make the logical and cognitive move from the general to the specific and vice versa.

Within higher education, there is espousal of the noble ideal of teaching students to think. However, a quick glance at the realities reveals that all too often this espousal is solely lip service. The student who truly cannot think falls very quickly by the wayside even though positive and caring professors may have, with good will, tried to help the student and created nothing but greater frustration for both.

Yet methods to improve teaching and learning in the world of ideas are discussed in pedagogical circles, and SALT principles and methods can be applied to this area although the majority of the work with SALT

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\*Paper presented at the 1981 SALT Conference.

has been in areas of skills or acquisition of facts or psychological improvements. It should be made clear that skills courses are not considered to be without ideas, but they do not form the apparent substance of the material students are expected to learn. My concern is improving learning in those areas of a discipline where the material to be learned is of rigorous, intellectual substance, i.e., concepts and ideas, and my point of departure is a literature class in German.

There are several learning problems one confronts in the foreign language literature class, the first of which is that most students have an incomplete skills base. Indeed, even the best students can be expected to lack in the necessary skills. Quite simply, their control of vocabulary is insufficient to provide reasonable understanding of the material without frequent consultation in a dictionary or vocabulary list.

Secondly, many students enter the class with a built-in resistance to literature, which was reflected beginning in the 1960s, in declining enrollments for both foreign language and English literature classes. If, for example, one says, "We're going to be analyzing a poem...", or "Today I would like to discuss the definitions of comedy and tragedy," an inner moaning can be perceived. Too often professors of literature have torn things apart through their analyses, but they then forgot to put them together again. For whatever variety of reasons, for many university students an ability to enjoy and to rejoice in the beauty and insight that good literature can provide has been either never aroused or ruined in them. This resistance is attributable most probably to factors from both within and outside the formal educational system. Thus, the teacher's task becomes one of creating or restoring enjoyment of fine literature and enabling students to find an enrichment of their personal lives that literature was meant to provide.

The third learning problem is the concepts of the study of literature and heightened appreciation of its content. For example, the concepts of literary criticism have befuddled many members of generations of both foreign language and English majors at the undergraduate and graduate level. Collective and personal enrichment through discussion of time-honored, humanitarian values to be found in literature unfortunately passes by some students. If the reader has ever asked someone, "What was the book about?" and was then subjected to a lengthy and detailed narration of content, the inability to synthesize has been encountered, a common learning problem. Such concepts as tragedy, comedy, and tragic vision are useful and enriching to one's life. To grasp them means to grasp the essence of being human. Tragic vision in literature refers to the imaginative portrayal of human ability to comprehend and conceive of perfection; yet we have the awareness that we shall not be able to reach and sustain that perfection.

These are the learning blocks of the literature class, and I am seeking to tackle them by applying SALT principles and methods. It is suggestion that I am applying in general; the concert stage and relaxation techniques I have not used at this level. My overriding goal is to create or recreate an enjoyment of literature. It should be noted that all activities of the class are conducted in the target language, German, and that the lecture and discussion modes of teaching and learning are used in addition to the techniques and examples following.

It is commonly accepted by the SALT practitioner and many others in

education that the involved student learns better. If the student in the foreign language literature class is involved with the material, reading stoppage will be diminished, i.e., the tendency for the student to look up too many words unnecessarily. Hence, one seeks to promote affective involvement in a variety of ways which promote right/left-brain learning and also fit under the rubrics of suggestion, play, and metaphor. For example, one can promote involvement with the question, "How would you feel if . . .," keeping in mind that much of the subject matter of the literature class is problematic in that literature generally deals with the problems, dilemmas, tragedies, and sadnesses of mankind. Therefore, the involvement one is seeking to promote may not be particularly cheerful. An illustration of purposefully disturbing suggestion is a guided image I used in connection with a short story assigned for the next day of class. The story concerned a mortally-wounded young soldier, who was being treated in his former high school, now used as a field hospital. During the last few minutes of class, I led the students in a guided image to reconstruct their own high school in a positive way. Then I jolted them by redoing the image in the manner of the story with the gruesomeness of the realities of war replacing the harmlessness of their images.

Visualization and guided imagery have proven effective both with the content of a work and with a concept such as that of *die blaue Blume*, "the blue flower," a concept important to German romanticism. Play was used to promote cognitive awareness of character development intuited by the student but difficult for some to discuss when rather lightheartedly students were urged to cast the characters of a medieval epic, *Tristan and Isolde*, for a movie. Their discussion and acceptance or rejection of various known screen figures revealed a great deal about character and character development in the work, more than a traditional lecture or discussion would have done.

Ability to synthesize can be promoted by encouraging students to brainstorm about a particular question, then to reduce the thoughts generated, and finally to form a sentence of a limited number of words. Such an activity gives them a way to penetrate to the core of ideas. I have also found it effective to assign them the small-group task of summarizing a work in a sentence of twenty-five words, writing the sentence on a large piece of paper, and then hanging them up about the room to be critiqued by others when all are done. By so doing, students become their own monitors and peer teachers.

Art as also been used to promote better understanding of the literary materials when a student able to sketch quickly was in the class. The short story, *The Tunnel* by Friedrich Durrenmatt, lends itself particularly well to visualization, and students were encouraged as a group to tell the artist how to portray the story graphically. The ensuing discussion was extremely lively with much healthy and good-natured disagreement. More than any other activity, this exercise served the unexpected purpose of showing both students and myself how the perception of others can be vastly different from one's own.

To exploit untapped potential, one can seek to tap intuitive or acquired knowledge that students have. In a literature class, one will, at some point, consider the concepts of tragedy and comedy, which traditionally will be presented in the lecture mode with students dutifully taking notes to be memorized for an examination, but not really learned

by some students. Instead of following this traditional route, I have requested that students work in small groups for a restricted period of time and use anything within their experiences to produce definitions and qualities of the terms "comedy" and "tragedy." As had been expected, their remarks were succinct and complete. They had not needed me to tell them anything; I served only to provoke verbalization of what they already knew, and no more time was spent than had I lectured in the traditional way. However, better learning can result for more students.

Also with the wish to tap student knowledge when working with drama, students can read passages aloud, nothing unusual in itself. But when asked how they would require the passage to be presented if they were directing the play, again the intuitive and unconscious perception of character can emerge.

Metaphor is a powerful teaching tool which can provoke students a leap of thought, and it is most appropriate as literature itself is metaphor in the widest sense--a comparison of two unlike things in order to enrich understanding of one in a way that could not be accomplished as well or as efficiently without the metaphor. Not only are the examples mentioned previously under rubrics of suggestion and play, they are also metaphors. An additional application of metaphor used for this class was for a work by Franz Kafka, and his works are very puzzling for many readers. One is inclined to attempt to bring reason to bear upon that which is eminently unreasonable. The Metamorphosis is a work often read in the German literature class, and a common student reaction is a puzzled scratching of the head. However, departing from the common slang metaphor, "He's a real turkey," can enhance student understanding of this often frustrating work. As this common phrase is used, he is, of course, not a turkey, rather he is being compared to the turkey in order for the listener to grasp the unpleasant qualities of the individual. But Kafka's work is actualized metaphor as the protagonist of The Metamorphosis, Gregor Samsa, is indeed truly a bug.

Other such uses of suggestion, play and metaphor could be mentioned, but it is hoped that these examples clarify the application of SALT principles to the world of ideas. If we do not try to reach those students who, on the surface, do not think as well as some others, we are denying the axiom of SALT, that the individual has an untapped potential. The belief system of the student may have to be challenged through suggestion in order to overcome resistance to literature and fear of its concepts. And, finally, literature ought to be enjoyed and savored as it was meant to be.

SALT ET LE MONDE DES CONCEPTS. La plupart des recherches du type SALT ont été faites dans le domaine de l'apprentissage des matériaux et des techniques de base. L'auteur de ce rapport discute les problèmes qu'on a dans une classe de littérature étrangère au niveau universitaire où le matériel du cours comprend des concepts ou des idées plutôt que des faits. On explique l'application des principes de SALT à une telle classe et en même temps on présente des exemples précis de cette adaptation.

SALT UND DIE IDDENWELT. Die Autorin weist auf Lehrprobleme hin, auf die man in einem Hochschulseminar für fremdsprachliche Literatur

stößt, wo der Inhalt Konzepte und Ideen statt Fähigkeiten oder das Wissen von Tatsachen darstellt, wie es in den meisten Forschungsarbeiten mit SALT bis jetzt durchgeführt worden ist. Die Anwendung der SALT- Prinzipien in solch einem Seminar wird erklärt, und spezifische Beispiele werden gegeben.

SALT Y EL MUNDO DE IDEAS. La autora presenta los problemas que se encuentran en una clase de literatura extranjera al nivel de la universidad en los cuales la substancia es conceptos e ideas más que habilidades o conocimiento verdadero en dónde la mayoría de estudios con SALT se han conducido. La aplicación de los principios de SALT en tal clase se explica y ejemplos específicos se presentan.



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### **Experiences of Suggestopedia**

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#### **Abstract**

The author describes and comments on a Russian language course taught Suggestopically to Swedish school teachers; he elaborates on several theoretical points and concludes with data from an elementary math course.

In May 1979, Katja Piller from the Technical University in Budapest, spent one month teaching Russian to a group of twelve teachers, most of them from Hogbergsskolan in Tierp. During that time we had 80 lessons, 45 minutes each. I would like to recommend such experiences. According to Lozanov, being a student in a course would be the first step in the training program of teachers. This gives you an opportunity to watch your own reactions to different things going on, and it gives you an idea of the circumstances which ought to prevail to make a language course with the suggestopedic method successful, as well as ideas of how to improve certain parts of the course.

In our case, the conditions could not be said to be optimal because of lack of consistent attendance by the students, not good enough correspondence between Russian and Swedish, and too little time working with the Kyrillic alphabet. These were obvious hindrances after some time in the course. The adaptation of a course from one culture to another should be allowed to face some difficulties before reaching maximum-efficiency.

It was not possible for all students to be present for all the lessons (only two people were); the reason for this being the typically necessary work in their ordinary professions. Moreover, some people did take part only to fill up the group. This is to be compared to the situation in Hungary, where in the next course, Katja Piller was going to select twelve people out of sixty who applied. In this case, the students were highly motivated university people with an expected good use for the knowledge. In our case, the primary interest was in experiencing the method. To us the beforehand knowledge of the Kyrillic alphabet was almost zero. In Hungary, people who are beginners probably have some passive knowledge of these letters and intonation due to the nearness to the Russian culture. The introductory exercises were obviously not sufficient to make reading easy. The progression of the course was probably too fast considering this.

In the course the teacher sought to individualize the teaching, which meant deciding what tasks were appropriate for different participants. This was not always a lucky choice. When this was too obvious, people felt devaluated at times. The individualization also meant applying sociological field theory to the group. This I know nothing about, but the teacher had from her criteria to decide who were going to work together in various tasks. In some conversations, people

who were good at talking were supposed to be grouped together. The reason was that the good speakers would not be interested in communicating with people who could speak little. The good speakers might lose their motivation to speak. However, it happened that I was in a group with someone who was performing well in the language and able to communicate creatively. This I felt was very stimulating and developing for me as I was not as good a speaker. Since there were obviously occasions when the communication to somebody was not active, the teacher had to try to see in what combination the communication could be improved. Often, of course, communication decreased because we did not understand what the other person said. This seems to be a problem that should be overcome.

One idea in suggestopedy is that it shall always be possible to communicate or do whatever is asked by the teacher. If not, the student would not be sufficiently prepared for the task. This may lead to some psychologically difficult situations. For example, the teacher should have good reason to believe that the student asked to perform a task that several people did just the moment before will succeed. Suppose that the task were to give a reply to a question and then further the question to the next person. In one case, I know I was thinking what reply I would give, as one by one the possible alternatives were mentioned by people before me, leaving me to repeat a reply. After that, I was still not able to ask the question because I was thinking of the alternatives.

The most obvious difference I found, compared to other learning situations in which I have been participating was the speed at which the teacher fed new material into the lessons. This I had seen in Sofia before, but taking part myself was another experience. Since the teaching was varied, I never got the feeling we were doing too much of something. I guess you could say that the different structures involved in the brain never were allowed to get overworked. When speaking about the elaborative exercises I do not think we did the same exercise twice except from songs we learned. This made each learning situation unique, which means it is more easily memorized. The high speed made it impossible for us to look back on something we just had worked with. It was impossible to repeat. We experienced a constant flow of new activities. Sometimes I think this was not good. Maybe a pause for pondering could be put into the scheme. This has been practiced in Stockholm in teaching Swedish to immigrants. The teacher put on some music and the students were given a short time to think things over on their own. But I am not sure that this Swedish approach is in line with what I feel is an idea in suggestopedy, namely that there shall be no direct repetitions of the same exercise. It is also an idea of suggestopedy that the attention of the students should be kept active by the teacher. If the students are allowed to repeat on their own, maybe the attention will rest on other things than learning. Perhaps there are other explanations? From irregular meditational exercises, I know it is impossible to focus the attention on the same object for even a short time. After a while, you notice that the attention has gone somewhere else. I feel that in suggestopedy the variation of activities, surprises and expectation are serving the purpose of keeping the students' attention on learning the subject and not thinking too much of other things. In the end of the course, the speed was slowed down as people wanted more

time to think things over and to practice more reading. The teacher said in private that the double speed was possible. The speed in the course initiates also the following reflection. How much of the better results are dependent upon the high tempo in the active parts of the lessons? Are you learning in the same way as in "ordinary" methods, but just increasing the speed and thus learning more? Or does the higher speed also mean the brain is working differently which you might think if you notice Lozanov's reference to Uchtomsky, where the defecation of cats was speeded up by increased external stimulation. Is it possible to compare the processes of defecation and learning, and conclude that the increased external stimulation speeds subconscious processes?

A very important aspect of suggestopedy is the work done to prepare a secure situation for learning. To diminish or reduce stress, all the different possible or identified stress factors will have to be counteracted by suitable means. This is the principle of relaxation, which contains also the algorithimical approach. If stress factors can be identified and counteracted, I suppose it is easier to increase the speed of stimulation. Some of the means even facilitate in themselves the increase of speed such as translation. Following are a number of stress factors and some means to reduce them.

#### **Some stress factors**

not being able to learn

not being able to understand

not being able to pronounce

not being able to remember

compulsion to learn given words

not recalling words

not being able to construct sentences

having nothing to say

expressing oneself incorrectly

expressing oneself to unknown people

expressing oneself in front of a group

feeling of threat or alienation

new and/or difficult material

#### **Counteracting or reducing means**

guarantee of success through statistics from earlier groups, conviction of own success

translation

phonetic writing

disguised repetitions

free choice from several hundred words

synonyms, "free" exercises

learning of complete expressions

support through preparation, written support

"neutral" corrections, self-correction

new biographies

preparations beforehand in several steps

nonverbal communication

music and other means

Just a few comments on the above-mentioned factors: the new biographies are intended to be a protection for the personality and a way to learn new phonemes. I did only the latter. Most people knew each



other before. The biography in this situation did not mean a sure way of liberating the personality. Lozanov once said that the psychology of teachers is very special and I can see that our situation was one wherein these words were, if possible, even more true. On some occasions our own students visited us. This was annoying to some, but others thought could be good for our students to see that their teachers, too, could have problems in learning. Despite this, I think we liked getting our new names and professions.

If the student needs help in a certain learning situation, he should be able to get it. To choose a correct grammatical form, the student might have to look at a wall chart for example. When the material is automated, it can be removed. In our case, we had the grammar on the back wall and in the dialogues of the course. If we needed help, we could find it, but we had to turn to be able to see. This extra effort discouraged us from searching for support unnecessarily. It may mean that the step from learning with support to managing on one's own was shortened. On the other hand the time for peripheral perception of the material was short and maybe not as effective as if the grammar had been nailed to the front wall.

Suggestopedy also means conscious use of two-plane techniques. The attention of the student is directed to a special task while the real purpose of the exercise is another, or maybe there are several purposes. Once the teacher wrote the numbers from one through fifteen on the blackboard. She then mentioned six of them in Russian (of course) and asked a student to recall them in the opposite order. I think he remembered five of them, but I do not know if the order was correct. What surprised us all was how well he pronounced them as we had only a little practice before. I think we all thought that this was remarkable. All exercises should have this two-plane quality. The task to remember things in opposite order prevented hesitation in pronunciation, and may have unlocked barriers to speech production.

Another aspect of suggestopedy was mirrored in the construction of dialogues, namely the knowledge of how people normally develop during a course. The first dialogue was quite heavy because of the expected high motivation in the beginning of the course. The third and fourth dialogues were quite easy because people were regarded to be a little exhausted after the first dialogue. The fifth and tenth dialogues were repetitions of all the previously given material. It would be interesting to know how learning plateaus fit into the construction of a course.

One of many good memories from the course was the opening of the lessons each day. The teacher had a small conversation with each of us on subjects with which she knew we were familiar, and were of personal importance to us. It was a soft opening of the lessons, suitable and much appreciated by everyone in the group. The exercises were a collection of many good ideas. Some of them allowed the students to take more initiatives than they were used to.

I think that the whole experience was very valuable, and I hope that future SALT Conferences can give more emphasis to more aspects of teaching, how to counteract stress practically, but also stimulation, creativity, the use of two-plane techniques, how to coordinate everything, how to keep students' attention, presenting exercises, looking at details of the process of instruction and other factors that can be of help

to teachers and students. Perhaps even certain aspects of teaching could be demonstrated and trained practically.

About the lesson in mathematics, I have no further comments. I would say that it speaks for itself.

# **Demonstration of mathematics in the first grade at the UNESCO meeting in Sofia, December 12, 1978**

On the blackboard in the beginning of the lesson (figures refer to order of activity).

9.  $674 + 25 = 699$

$25 + 674 =$

$699 - 25 =$

$699 - 674 =$

6. a 76 398 677

b 34 105 57

a-b

4. [74,9,268,945,46]

11.  $(438 + 121) - 438 =$

$865 - (64 \cdot 21) =$

$(352 + 23) + (945 + 532) =$

5.  $140 + 32 =$

a)  $32 + 3 > 38 - 4$

b)  $67 - 67 < 358 - 358$

c)  $689 + 0 = 689 - 0$

d)  $5 - 453 = 5 + 604$

e)  $400 + 23 = 423 - 2$

1. **Song.** The class enters the classroom together with the teacher. The class starts singing. The students clap their hands.

2. **Brownie.** The teacher fastens a brownie to the wall and talks about it.

3. **Mental arithmetic.** The teacher moves around in the class asking questions:  $800 + 125$ ,  $950 - 35$ ,  $900 + 5 + 5$ ,  $990 + 10$  and so on, around 20 questions at a high speed.

4. **Theory of sets.** One student is asked to write the partial set of three-digit numbers, another one the partial set of numbers that are not two-digit. The students write slowly, but neatly and correctly. The teacher asks, "How many elements has the set the student is writing?"

5. **Equality-nonequality.** The teacher: "The brownie is very wise and has set some traps for you. We must show him that we know all signs." The teacher points to the tasks on the blackboard. One student makes a mistake on task 5d.

6. **Subtraction.** The second subtraction was not successful. The teacher takes the student's hand, turning her so that she is facing the class asks the class for help. The student is happy, not bothered.

7. **Geometry, theory of sets.** The teacher picks up a table with geometrical figures. The students are going to write the partial set of squares and circles.

8. **Geometry.** The teacher picks up a table with three triangles and asks the students at a very high speed while filling the columns with "yes" or "no."

|                                                                                     | right-angled | acute-angled | obtuse-angled | ?   |
|-------------------------------------------------------------------------------------|--------------|--------------|---------------|-----|
|  | yes          | no           | no            | no  |
|  | no           | yes          | no            | yes |
|  | no           | no           | yes           | yes |

9. **Addition and subtraction.**

10. **Equation.** The teacher: "Take part in a game. Everyone who can guess may take part in the game, a game with snowballs. Each student gets a round piece of paper. You shall write what "a" is on the snowball." On the snowballs was written:  $a - 20 + 400$ ,  $\{20 - 20 = 400$ ,  $23 + a = 25$ .

11. **Counting with brackets (parentheses).** The teacher: Those who want to continue, open their sumbooks. Everybody does. Write the date of today. The students are calculating, whispering. The teacher puts on a tape recorder with classical music, at first with a very low volume, then a little louder, but still rather low. Three students go up to the blackboard and write the answers.

12. **Problem.** The teacher: Where the brownie lives, there are 267 bells. There are cones too, but 21 less. How many cones are there?  
 13. **Constructive problem.** The teacher asks for help to find a problem where addition of  $140 + 32$  is included. 14. **Song.** The lesson is ended with a song.

Time 39 minutes. 31 students. The class was regarded as medium good. The tempo of the lesson was generally high, very high on the 3rd and 8th moments. On the 11th moment, the students had plenty of time. As can be seen the students did not have to carry or borrow in this the first part of the mathematics course. Also notice the security creating devices on 9 and 10. If the student needs some help, he can find it by looking at the already-solved examples. Consider the way of opening and ending the lesson with a song. In the song, everybody's attention is caught in an efficient and popular way. The lesson indicates what students can learn in less than three months' time. The students were not stressed despite the high speed. They were used to this way of working. The lesson was in line with the characteristics of suggestopedy mentioned by the first deputy Minister of Education, Predan Stoyanov: emotionality and stimulation of intellectual capacities and creativity.

#### **Experiencias de Sugestopedia.**

El autor describe y comenta sobre un curso de ruso enseñado sugestopedicamente a maestros suecos; él elabora sobre unos puntos teóricos y concluye con datos de un curso elemental de matemática.

#### **Erfahrungen mit Suggestopädie**

Der Autor beschreibt und kommentiert einen Russischkurs, in dem schwedische Lehrer suggestopädisch unterrichtet wurden. Er gibt genauere Einzelheiten über einige theoretische Punkte, und schließt seinen Artikel mit Daten von einem Mathematikkurs für Anfänger.

#### **Expériences de suggestopédie**

L'auteur décrit et commente un cours de russe enseigné d'une manière suggestopédique aux enseignants d'une école suédoise; il explique en détail plusieurs points théoriques et conclut avec des données d'un cours de mathématiques élémentaire.

**Modifying Mathematics Instruction  
for Gifted Students Using SALT\***

Pamela Haines

**Abstract**

The findings of this study are based upon observation of mathematics instruction for two groups of gifted students at the fourth grade level. There are indications that the SALT method provided a means for both enriching and accelerating the regular mathematics curriculum for such students. These preliminary findings also indicate that most gifted students preferred learning mathematics using SALT rather than by the traditional approach. Details of the class are explained, and recommendations for research and practice are given.

Gifted children represent a human resource of richness and potential for excellence, and in recent years growing numbers of people have called attention to the special educational needs of these children. Increasing numbers of gifted children participate in special programming, and with this increase, there is a search for innovative and effective programming (Council of Exceptional Children, 1978). Currently, program planners believe they must make a choice between enrichment and acceleration. Enrichment is often chosen, yet it is a choice not without disadvantages. When gifted students are not in an enrichment program, they are learning more easily and rapidly in the regular classroom. Thus, in order to meet the needs of gifted children, the classroom curriculum must be streamlined and enriched so that they are challenged. One must ask if the concepts taught in the classroom can be taught more rapidly so that time is left for enrichment activities. Suggestive Accelerative Learning and Teaching (SALT) is a teaching system that is able to provide both enrichment and acceleration for gifted children.

In the area of mathematics, there is evidence that gifted children can benefit from acceleration. Johns Hopkins University has been actively seeking mathematically talented youths and providing special accelerated courses for these secondary students. This program, however, requires a commitment to attend extra classes on Saturdays and/or summer classes. Follow-up studies indicate positive attitudes and a high achievement level (Stanley & George, 1980; Stanley, Keating & Fox, 1974). The program provides no additional depth or breadth in the presentation of the curriculum, nor does it offer the students an opportunity to explore and develop their creativity. It is rather one of acceleration without enrichment.

The SALT system accelerates students and provides enrichment and opportunities for creatively manipulating the material. Clark (1979) writes that the SALT system has exciting possibilities for the education of the gifted. While the SALT method has not been used specifically with gifted students, success has been reported in several disciplines and at different levels of education (Benitez- Bordon &

\*Condensation of Ph.D. dissertation at University of Denver, 1981.

Schuster, 1976; Herr, 1978; Phillipov, 1975; Prichard & Taylor, 1978; Robinette, 1975; Taylor, 1978).

The purpose of this study was to describe the application of Suggestive Accelerative Learning and Teaching in the teaching of two groups of gifted children in mathematics. The research questions are as follows:

1. What are the differences among gifted children in their responses to SALT?
2. Would the SALT method accelerate learning in gifted students?
3. Can larger-than-typical amounts of material be successfully presented to gifted students using SALT without sacrificing achievement?
4. How appropriate is SALT for use with elementary-age gifted children?

### Research Design

The design of the research is a descriptive case study. Teacher lesson plans for regular fourth grade mathematics curriculum were developed using SALT guidelines. These plans were then implemented for one semester with two groups of children identified as gifted by the standard school district criteria, according to which several instruments were used to assess levels of performance on academic, intellectual, creative, leadership, and motivational measures. These are children whose potential for academic achievement is such that the district believes it should afford special provisions to meet their educational needs.

The SALT math classes were each conducted for one hour a day every school day during the time that the gifted children's classmates were receiving mathematics instruction in their classroom. Observations of these applications were used to develop a theory about the effectiveness of SALT with gifted students in accord with the model of theory building for the social sciences developed by Robert Dubin in *Theory Building*.

Information on the students was gathered from several sources. Mathematics achievement was measured using the district-designed Program Criterion Reference Test (PCRT) for mathematics for the end of the fourth grade. This instrument was given in January. Students were given the chapter tests provided by the textbook series and district-designed objective tests for units of study. Quarterly narrative progress reports by the teacher were also reviewed. At the end of the semester, students took the Stanford Achievement Test in mathematics and an informal attitude survey. Existing information in student records was also examined, including scores on the Short Form Test of Academic Aptitude, a group intelligence test; the SOI Learning Abilities Test short form for gifted students; sex; minority status; time in the district; and other anecdotal information which was available. A record of teacher lesson plans, teacher notes on these and anecdotal information from meetings with classroom teachers and other school personnel, meetings with parents, and anecdotal reports of classroom behavior were also reviewed.



### **Limitations of the Study**

There were three limitations to this study. A disadvantage is posed by the model of teacher as observer because this represents only one point of view, that of one intimately involved in the object of the study. However, there is also the benefit of obtaining the view from the practitioner's perspective. The second limitation is that in the Denver metropolitan area, gifted children continue to attend neighborhood schools, and, consequently, the number of appropriate identified children available as a study group was small. In addition, the actual learning environments were the regular schools of the children and could not be controlled as totally as recommended by the SALT method.

### **Summary of Gifted Education**

During the last twenty-five years the concept of giftedness expanded as did the major goals of programs for the gifted. Initially the emphasis was on high intellectual ability as measured by intelligence tests and the most often stated goals of special programs were to nurture special talents as a national resource to assure their future usefulness to society. As our national problems were perceived to be more subtle and complex and requiring novel and unanticipated responses, creativity became important. An increase in domestic social conscience and involvement in global crises resulted in a re-evaluation of our nation's diverse cultural groups and the unique contributions the gifted among them could make. By the end of this period creative, leadership, and artistic abilities were included in concepts of giftedness along with intellectual ability. Also by the end of the period, programs had added to their goal of facilitating the realization of these individuals' contribution to society, a goal of facilitating these individuals' own quest for personal fulfillment. While most program structures seen at the end of this period were not new, the diversity of students found in programs called for a change in the content and process within programs.

### **Mathematics Education**

Likewise, during the last twenty-five years the field of mathematics education has changed in several areas. There has been a shifting of emphasis on which groups to include in deciding curriculum, topic sequence, what constituted appropriate content, and how best to teach mathematics to children.

In the 1970s "modern math" was introduced, and this curriculum reform was based upon a move away from computational accuracy gained largely through repetition and drill and toward understanding of a more abstract nature and a more active learner involvement in discovering patterns and solutions. One report by a group of mathematicians maintained that the "brilliant students" would especially benefit and derive from the experience "a view of mathematics as a field for creative activity" (Cambridge Conference on School Mathematics, 1963, p. 28). Studies of the new methods and curriculum had mixed results, and the findings of one study showed that the discovery method was not superior across all variables as had been anticipated (Worthen, 1967). Another study of the discovery method was confounded by differences in teachers (Berger & Howitz, 1967).

By the 1970s there was growing feeling against the program, clearly articulated by Kline in a book called *Why Johnny Can't Add*.



After exploring the structure and meanings of mathematics in the 1960s, there was a concern in the 1970s to assure basic computational skills. In addition, in the 1970s Computer Assisted Instruction and microcomputers began to have an impact on mathematics instruction. An interesting study was conducted at John Hopkins University under the leadership of Julian Stanley. The Study of Mathematically Precocious Youth monitored selected youth in the special program already mentioned, and they benefited from this acceleration.

However, a National Assessment of Education Progress of Mathematics at the end of the 1970s indicated that students may be able to do calculations learned by rote, but they do not understand underlying concepts. Many cannot solve the most basic problems (Carpenter, Kepner, Corbitt, Linquist & Reys, 1980). In response to this situation the National Council of Teachers of Mathematics formulated recommendations for action in the 1980s, including recommendations that problem solving should be the focus of school mathematics. Basic skills in mathematics should be defined to encompass more than computational facility. It was also recommended that mathematics programs must take full advantage of the power of calculators and computers at all grade levels. The Council further stated that more mathematical study must be required for all students. Although the main thrust of this particular objective was toward the less able, the Council stated that the mathematically-gifted student was the "most neglected" (National Council of Teachers of Mathematics, 1980).

### **Key Aspects of the SALT Method**

Many aspects of the SALT method have been researched, and the SALT emphasis on problem solving is especially relevant to mathematics education as noted in the recommendations of the National Council of Teachers of Mathematics, who have made this problem the first priority. In addition to creating an expectancy for success, the SALT method integrates into an organized system several elements indicated as important for gifted education such as nurturing and enhancing creativity and providing acceleration. The method also shares a concern common to both educators of the gifted and those of mathematics, and that is the importance of a positive and competent teacher in an aesthetically-enriched environment.

### **Teacher Lesson**

Plans For this study, SALT teacher plans were developed using the district's manual, *Mathematics Instructional Objectives and Resource Guide*, and the district's textbook, *Holt School Mathematics* for fourth grade (Nichols, Anderson, Dwight, Flournoy, Kalin, Schluep, Simon, 1978, 1974).

The SALT cycle generally addressed one entire chapter at a time and followed the sequence in the text. The order of topics was as follows:

1. Numeration, including place value
2. Number sentences, including inequalities
3. Adding, largely review except for concepts of estimation
4. Subtracting, also largely review
5. Plane geometry
6. Solid geometry
7. Single digit multiplication

8. Multiple digit multiplication
9. Multiple digit division
10. Fractions, including equivalent fractions
11. Adding and subtracting fractions
12. Measurement, both standard and metric, with a metric emphasis
13. Graphs and probability

This text series represented spiral presentation, which meant concepts were introduced first at a simple level in early grades and subsequent presentations in later grades reinforced and deepened the concepts. Mastery was not expected at first presentation but only later.

Generally, each chapter provided the content for one SALT cycle and was presented following this SALT outline:

1. suggestive set-up
2. physical relaxation,
3. mind calming and early pleasant learning restimulation,
4. preview or review of material,
5. dramatic presentation,
6. passive review,
7. practice,
8. self-graded quizzes,
9. pre-announced chapter test published by the textbook company.

The sessions lasted one hour, and steps one through six of the SALT cycle were generally presented in one session. Chapter tests also took one session. The variation in the number of sessions used to complete a chapter were the result of variation in the number of days devoted to the practice step. Self-graded quizzes took only five to ten minutes during the practice step, which lasted only one day during the chapter on multiplication and division. Cycles interrupted by Thanksgiving and Christmas breaks were also longer.

### **The Subjects**

This study was conducted in the Adams County District No. 12 public schools located in Northglenn, Colorado, a northeastern suburb of Denver. Census data collected in 1978 indicated that there was an enrollment of 19,000 students in grades K-12. The per capita income was \$6,314, the average household income was \$21,151, and the median income was \$22,011. Aid for Dependent Children was provided for 995 children in the district.

In the district, students had been selected for the gifted program by a variety of criteria including judgments of creativity, IQ scores, motivation, and leadership as well as direct evidence of previous accomplishments. The two schools with the largest populations of identified gifted children at the fourth-grade level were used in the study. In School A, there were 10 students, 3 girls and 7 boys; and in School B, there were 9 students, 3 girls and 6 boys. In both schools, all of the children were the usual age for their grade, with the exception of one boy in School B who was one year younger than his classmates. There was only one child of minority status, a Hispanic boy in School B. None of the children had any reported handicaps.

### **The Setting**

The gifted children were served in their local school building, resulting in 2 to 11 children at any one building for a given grade level. The students received the special mathematics instruction in a room within their regular school, and this room had been designated by the principal on the basis of available space.

In School A, the room was the remedial reading room. This room was chosen because the mathematics program was offered in the morning and the reading program was offered only in the afternoon. The room was stocked with special reading materials. Bulletin boards and posters reflected this special use. It was a small room with a teacher's desk and four student-size tables with chairs, bookcases, and cabinets. The reading specialist was very cooperative and enjoyed the addition of art prints in the room.

In School B, a large conference room was used. This room had no bookcases, no teacher desk or posters. One corner was used to store unopened boxes of supplies and extra student furniture. There were unused bulletin boards and blackboards and four adult-size tables with vinyl reclining chairs of the type seen in executive offices. This room was also decorated with art prints. The Adams County District No. 12 media center had a large selection of art prints that were used. Five prints were displayed at each school, and the prints were changed every two weeks. Both rooms were interior rooms with no windows.

In both schools, these math periods coincided with the planning periods of the music instructors, and the school's quality stereo equipment, on a mobile cart, was transferred to the "math room" for use. Both schools also had new Apple II microcomputers on mobile carts, and they could be scheduled for use, too.

### **Characteristics of Gifted Students and Elements of the SALT System**

Clark (1979) has defined a number of characteristics of gifted children, and an explanation of the interaction of these characteristics and the elements of the SALT method provides a good understanding of the conduct and events of the class. A presentation of this interaction follows.

**Extraordinary quantity of information and unusual retentiveness.** This characteristic was difficult to relate to students' acceptance of suggestions for success because the students' expectancies for learning before the SALT class were unknown. The teacher's high level of expectancy for rapid, efficient learning stimulated the teacher to plan lessons covering larger amounts of material and using more sophisticated vocabulary and associations with other disciplines, such as gemology and astronomy, than she would have for a typical class. This took advantage of the students' existing information and provided increased amounts of new information for learning.

This characteristic allowed the students to enjoy the variety of activities in the practice phase. The rote learning required was generally mastered quickly, and the range of information already available to the students allowed them to create for themselves interesting elaborations. For example, in drawing thin soldiers for standard numerals and fat officers for expanded numerals (to accommodate the place name on the chest with the digit), one student became

involved in assigning the officers more specific ranks, such as colonel and general. In a discussion of things appropriately measured by various metric units, students volunteered such things as landscaping dimensions for meters, jet travel for kilometers, medicine for millimeters, and things under a microscope for micron (a micron was not in the text, but one of the students introduced it).

This characteristic was also stimulated by the addition of art prints and classical music in the learning environment. Students sometimes recognized the art prints, such as the Mona Lisa, and a few students wanted to know the composers and names of music selections.

An interaction between this quality and the physical relaxation or the passive review was not observed although this characteristic enhanced students' mind-calming experiences. Students were able to remember and report their imagery experiences in detail.

The students' extraordinary fund of information also appeared to enhance the dramatic presentation. Striking associations were made in a broad range and at a level of sophistication that might not have been possible in a regular class. For example, associations were made with science fiction, electronic artificial intelligence, and gems and metals. The students' unusual retentiveness appeared to contribute to their success in both the ungraded quizzes and the examination.

**Unusual curiosity and variety of interests.** This did not appear to interact with student expectancy for success resulting from suggestions. The increased teacher expectancy caused the teacher to create interesting and varied lesson plans. As previously noted, some children expressed curiosity about the music and art prints in the learning environment. Most students also became interested in the physical relaxation exercises. They were particularly interested in movements with animal associations such as the turtle and the bird. Students also appeared fascinated by Yoga postures such as the royal twist.

The variety of the students' interests were explored in the open parts of the mind calming. Most of the guided imagery had parts that students had to fill in on their own such as suggestions that they could fly over a large mountain and go to a place they had always wanted to go. One student went to Disneyland, one into outer space, one to Lake Tahoe, and many went up into the mountains.

This characteristic was also stimulated by the dramatic presentations and the variety of activities in the practice phase. For example, students who were not particularly fond of math but did like drawing expressed enjoyment in making tessellation pictures and metric posters and asked to do more of them. The passive review, ungraded quizzes and examinations did not appear to be related.

**Unusual capacity for processing information.** In this connection, students seemed to benefit from the teacher's increased expectancy for success. The teacher presented the curriculum in large units at one time. In the learning environment, the teacher occasionally posted comic strips related to the topics under study. Students noticed them without prompting. Most students were immediately aware of any changes in their environment. If a cassette tape came to an end, a student quickly got up and restarted it.

A relationship was not observed with this characteristic and physical relaxation, the ungraded quizzes, or the passive review.

Students appeared to process the mind-calming experiences and the dramatic presentation rapidly. The mind-calming experiences were shared after each imagery and most students reported experiences. During the dramatic presentations, there were opportunities for students to respond with extensions or examples of a concept. Most students were immediately able to do this.

There was considerable variability among the students with regard to processing information during the practice phase and the bonus questions on the exams. (Bonus questions were brain teasers added to the tests by the teacher.) All the students did well on the activities in the textbook and the textbook chapter tests. The average score for all chapter tests by all students was 96%. When activities during the practice phase or on extra bonus questions required higher level cognitive skills such as analysis, synthesis, and evaluation or creative problem solving such as restructuring the question, some students readily solved the problems or persisted on their own to do so, but some gave up easily when it became apparent that their usual tactics were not successful. These students then expected the teacher to provide the answer for them.

**Flexible thought processes.** This characteristic did not appear related to expectancy for success, the learning environment, physical relaxation or the ungraded quizzes. It seemed to related only to the bonus questions added by the teacher to the examinations. Often these questions required a change in the usual problem-solving strategy. Those students who learned the most rapidly or appeared to be the most creative were also most successful in solving the bonus questions and similar problem-solving activities done during the practice phase. The children who appeared most creative seemed to particularly enjoy activities requiring flexible processes. For example, they enjoyed making a flowchart of a newly-learned procedure; one boy dated his papers every day in Roman numerals; and one boy always tried to invent a way to perform procedures that was different from the method presented.

None of the students had done any guided imagery activity before, but by the second session in which an imagery was done, most of the students appeared able to do this successfully. The mind calming provided an opportunity to develop and use their flexibility in this new mode. During both the dramatic presentation and the passive review, the students' mental flexibility was stimulated when they made novel, humorous, or bizarre associations with the content. One boy, although academically gifted, was not successful with the guided imagery activities, nor did he like doing the physical relaxation movements. His lack of flexibility was also evidenced by his resistance to any activity except the regular textbook exercises and tests. He chose to return to the regular classroom half way through the semester.

**Heightened capacity for seeing unusual and diverse relationships.** This characteristic did not appear to be related to the expectancy for success, the learning environment, ungraded quizzes, and exams. Only in one session was this trait observed to be related to the physical relaxation. To prepare for the geometry chapter, students were asked to make their bodies into various shapes. There was an interesting diversity in the triangles; for example, one boy bent over from the hips and put his hands on the floor in front of him, a girl got down on the



floor in a position similar to that at the beginning of a somersault; and another girl sat on the floor with her legs spread apart and bent to put her hands on her feet.

This trait was stimulated during the mind calming. For example, a guided imagery to Euclidland asked students to visit a place with no typical scenery but open space filled with shimmering points, lines, segments, and rays. Both the dramatic presentations and passive reviews required making novel associations, as did some activities of the practice sessions.

**Ability to generate original ideas and solutions.** This did not appear to be related to suggestions of expectancy of success, the learning environment, physical relaxation, dramatic presentation, the ungraded quizzes, or the examinations, except in the bonus questions. As previously noted, the mind-calming experiences encouraged personal innovation in internal imagery. Students were encouraged to create internal images during the passive review as well.

The practice sessions especially stimulated and challenged this ability. For example, students were asked to create a rhyme like "one-two, buckle my shoe" using Roman numerals, such as "i-ii, a fly in my eye." Students were asked to take one digit and make the multiplication facts into a song. They used tunes like "Yankee Doodle," "Oh, Susanna," or "Stars and Stripes." One boy belted out a version of "That's Entertainment," one used a love song from a musical, and several did rock-and-roll renditions accompanying themselves with vocalized drum beats.

**Early differential patterns for information processing including thinking in alternatives and abstract terms, sensing consequences, and making generalizations.** This characteristic did not seem to be related to expectancy for success, the learning environment, physical relaxation, mind calming, dramatic presentation, the passive review, the ungraded quizzes, or the examinations.

It was stimulated during the practice sessions, particularly when students were given manipulative materials. For example, students used Miras to find lines of symmetry in various regular and irregular polygons. In each class, one boy discovered that the number of lines of symmetry in a regular polygon is equal to the number of sides.

**Large accumulation of information about emotions.** This appeared only to be related to the SALT element of mind calming. Imagery allowing students to fill in a situation gave them a technique for processing emotional information. For example, one image involved an imaginary visit to a personal control center. Here at the ultra-modern console, students could see and change a part of their body in any way. The most common part chosen for change in both groups was the brain — "to make myself smarter."

**Unusual sensitivity to the expectations and feelings of others.** This appeared to be related only to the SALT element of expectancy for success in learning and seemed to be an interaction with the teacher expectancy. The students appeared receptive to the increased teacher expectancy not only for the effective learning of the regular curriculum but for the additional problem solving and creative products as well.

**Keen sense of humor.** This did not seem to be related to the expectancy for success, the learning environment (except for the occasional comic strips), the mind calming, the ungraded quizzes, or the



examinations. The trait was sometimes stimulated during the physical relaxation when the movements represented animals, such as the turtle. The dramatic presentations particularly appeared to interact with this characteristic.

During the passive review, students were encouraged to create internally unusual or humorous associations, but this was not observable. Some activities during the practice sessions also stimulated this characteristic. When asked to make a picture using lines, points, and rays, several humorous drawings resulted.

**Personal sense of satisfaction.** This appeared to interact with suggestions for successful learning. As students experienced accelerated learning, they accepted the suggestions for rapid learning and also suggestions that the learning would be enjoyable.

The mind-calming experiences also appeared to reinforce their personal sense of satisfaction. The open parts filled in by each student were not evaluated by another person but could only be known and valued by the one internally creating the experience although the students verbalized their experiences. A similar interaction was present with the internal images created during the passive review.

Many of the enrichment activities done in the practice sessions were not graded, such as the students' multiplication songs or calculator activities where students solved a given problem and then created their own problems for others to try. Although the teacher and other students expressed interest and appreciation, the student creating the product ultimately was left to determine his or her own level of satisfaction with the results. The most rapid learners in both classes also frequently asked the teachers for more difficult activities. When the students began learning multiplication and division with several digits, these students wanted to do exercises with very large numbers although after they felt confident that they had mastered the procedure, they preferred using the skill within a problem like finding the average height in the class.

Self-graded quizzes seemed to contribute to the students' personal sense of satisfaction. Although students were motivated to achieve high grades the examinations on each chapter provided little discrimination among the students. Most students did all of the items correctly or missed only one or two, often simply from carelessness. Grades on these examinations appeared to contribute somewhat to their sense of satisfaction; however, students were also aware that the chapter tests from the textbook did not cover all of the additional activities they had done, so that some part of their perception of total achievement was self-evaluation.

**Unusual discrepancy between physical and intellectual development.** This characteristic interacted with the physical relaxation activities. These activities did not require speed or endurance but did develop coordination, balance, flexibility, and a conscious awareness of parts of the body. Several students were active in team sports. All of the students eagerly did the activities, except the boy previously noted, but there was considerable variability in their performance. Two of the girls appeared to be quite conscious of their feminine image and had already internalized traditional beliefs that young ladies do not do such things. Their performance was often self-conscious. One boy was always willing and enthusiastic; however, his coordination and balance were poor. Two

of the boys did moderately well, although they were often improvising on the movements and therefore were difficult to assess.

**Mind/body split.** Physical relaxation activities promoted an integration of mind/body functions. Movements did not require speed or strength but did require concentration and sometimes complex posturing. This engaged the mind as an active partner with the body. Students were also directed to become aware of body tension and relaxation.

Mind-calming activities were always begun with conscious deep breathing and conscious relaxing of body parts, which contributed to mind/body integration. The imagery trip to the personal control center also supported the idea of the mind's link with the body.

The controlled breathing and relaxation of the passive review were intended to integrate mind and body although only half of the students appeared able to synchronize their breathing with the music. Some students, when told to hold their breath, took sudden gulps of air and then tensed to hold it in. They appeared more relaxed just breathing normally.

**Early involvement and concern for intuitive knowing.** Mind calming especially enhanced this characteristic. The images students created to fill in the open parts generally were intuitively created. For example, once they were told to imagine they were a cloud floating over a lake when something flew by. Everyone reported seeing something different, and one only heard a jet go by. One saw Superman, one a UFO, many saw different kinds of birds, singly or in flocks, and one saw a person. The passive review was intended to stimulate this in the personal creation of images to associate with material, but this was not reported by students so it could not be evaluated.

**Openness to experiences in the intuitive area.** This trait was explored in the mind-calming activities. Most of the students were open to the imagery even though they had never done it before. The boy previously mentioned resisted the activities, and one other boy, a Chicano, never successfully did one of these imageries. This boy said he became very uncomfortable when he closed his eyes. He always wanted to watch the teachers and the other students.

**Creativity apparent in all areas of endeavor.** Generally this quality did not appear to interact with physical relaxation except in the session when students were asked to make themselves into various shapes. Creativity was encouraged in the mind calming and passive review in the generation of internal images. Student creativity was particularly encouraged in the practice sessions where students expressed mathematics content in some art form.

**Strongly motivated by self-actualization needs.** Expectancy of success was related to this quality. An important part of these children's self-images seemed to be their perceptions of themselves as able learners and as bright. Suggestions that they would learn rapidly and have fun doing it appeared to reinforce their need to excel in this area.

The practice sessions also provided students with opportunities to meet these needs. For example, these children were eager to become competent using modern electronic aids such as hand-held calculators and microcomputers. They also seemed eager to solve problems and play instructional games requiring them to develop complex strategies.

**Advanced cognitive and affective capacity for conceptualizing and solving societal problems.** Although this characteristic was

not fully addressed, two SALT elements contributed partially to it. The sharing of imagery experiences seemed to increase students' awareness of individual differences and encourage an appreciation, or at least tolerance, for these differences. Many of the activities done in the practice sessions were done in pairs or small groups, which helped students to develop skills in cooperation and division of responsibilities among group members.

**Multiple interactions.** For all of the students except the boy who asked to return to the regular classroom, several SALT elements, the enrichment activities in mathematics, and the opportunity to use hand-held calculators, and the microcomputer seemed to combine to enhance the students' functioning in several characteristics. All of these students expressed enjoyment in the class as a whole. On the informal attitude survey given at the end of the semester, all indicated that they would rather learn mathematics using the SALT method than by the method used the previous year. Eighty-two percent felt they were "very good at math," 88% "really like math," 59% "like to learn math at a faster speed," and when given a difficult problem, 76% "like to try to figure it out for themselves" rather than have someone tell them the answer. In most cases, however, it was difficult to determine the extent to which each SALT element contributed to this positive evaluation.

Although it appeared that the self-graded quizzes and the examinations were the least liked, they did not seem to be negatively valued. Most students were very competitive and were eager to measure themselves against each other and the standards set by the district for achievement. They not only wanted to know how well they had done but also were concerned about their speed in finishing a test, even though the tests were not timed. Students often asked each other what score they had earned and appeared aware of who had finished before them. They also occasionally asked the teacher how many minutes it had taken them to complete a test.

Danny, a student in School B, and Jennifer, a student in School A, were interesting examples of a multiple interaction. Each of these children appeared especially high on the cognitive trait variety of interests, and the societal trait advanced affective capacity regarding societal problems. In both cases, their mothers told me that in the previous school year, the children had been so unhappy in the gifted program that the parents had requested that they "take the year off" from the program. A particular concern of the children had been the segregation from their average classmates and the gifted program's emphasis on individual independent study. The mothers reported that, unlike last year, the children were extremely enthusiastic about their participation in the SALT class. Aspects they especially enjoyed were the expectancy of success and fun, the aesthetic learning environment, the physical relaxation activities, the dramatic presentations, and the diversity of activity in the practice sessions, particularly with the opportunities to work in groups.

The children for whom mathematics was not a favorite subject also appeared to enjoy the SALT class for several reasons. Their cognitive traits of unusual curiosity, a variety of interests, flexible thought processes, and ability to generate original ideas and solutions, their sense of humor, and their creativity appeared to be stimulated by the aesthetic learning environment, physical relaxation, mind calming, and

the dramatic presentation, the passive review, and the practice sessions. These children especially enjoyed their study of geometry. They were delighted by their images of brightly colored lines and points during the mind calming; during the dramatic presentation they were amused by silly Poly, a parrot with several cages, one a square, one a rectangle, one a pentagon, and one hexagon; and they enjoyed creating tessellation designs during the practice session. Several students asked for extra pages on tessellations to take home. After a few sessions, these children also requested certain selections of music as well.

The students' unusual capacity for processing information also seemed to be stimulated by several aspects. The eagerness of some students to learn more material more quickly than it was typically presented, was met by the expectancy for success, especially the teacher's increased expectancy and resulting presentation of larger amounts of content at a time, the dramatic presentations, and the practice sessions when additional enrichment activities were available, including programming the microcomputer. One girl said it was "like getting two recess periods in the morning" and several often said, "I wish I could have all my classes here."

#### Empirical indicators

Three empirical indicators of student achievement in mathematics were used: the district-designed Program Criterion Reference Test (PCRT), the Stanford Achievement Test in mathematics, and the chapter tests in the text. The rate at which students successfully completed chapters was indicated by the chapter tests.

Table 1 lists the chapters in the textbook in the order in which they were presented. The days of instruction covered all steps of the SALT cycle including the final day of each cycle devoted to the chapter tests. The average scores were for all students in both classes and were calculated only for the material in the published chapter tests. Bonus points students earned for the brain teasers were not included in these averages. In fact, including these scores often as many as one half of the students earned scores of 102% to 110%.

Table 1  
Student Achievement on Chapter Tests

| Chapter | Instruction                      | Days of<br>(Percent) | Average<br>Score |
|---------|----------------------------------|----------------------|------------------|
| 1       | Numeration                       | 10                   | 97               |
| 2       | Number Sentences                 | 4                    | 98               |
| 3       | Adding                           | 5                    | 99               |
| 4       | Subtracting                      | 0                    | 99               |
| 5       | Geometry                         | 6                    | 99               |
| 11      | Geometry                         | 6                    | 97               |
| 6       | Multiplication and Division      | 11                   | 96               |
| 7       | Multiplication                   | 9                    | 93               |
| 8       | Division                         | 8                    | 86               |
| 9       | Fractions                        | 7                    | 94               |
| 10      | Adding and Subtracting Fractions | 4-6                  | 94               |
| 12      | Measurement                      | 6-7                  | 97               |
| 13      | Graphing                         | 0-2                  | Incomplete       |

Note: n = 17



The students did not have a mathematics class every school day due to school-wide testing, special programs, or half-day sessions for parent conferences. In December, several students participated in holiday programs and missed classes due to rehearsals. This accounted for the variability in days of instruction in Chapters 10, 12, and 13.

Chapter 3 was devoted to addition of large numbers, estimating sums by rounding each addend, and estimating sums using the dollar sign and decimal point. The chapter test for Chapter 3 was cut in half and the piece with the addition items using large numbers was given at the same time as the test for Chapter 2. The average score on just that half of the test was 99%. That half of the chapter was not covered. When the second half of the chapter test for Chapter 3 was given the entire test for Chapter 4 was given. Chapter 4 covered the same concepts as Chapter 3, using subtraction. Students were able to successfully transfer their knowledge of rounding and estimation of sums to the rounding and estimation of differences without instruction. The test for Chapter 6 was given eleven days later. During this chapter, the variability in the students' mastery of multiplication and division facts resulted in considerable variation in the rate at which they completed the chapter.

Students who had already mastered their arithmetic facts began to use the microcomputers. In School A, this group included Amy, Jennifer, and Troy. In School B, the group included Lewis, Margaret, Danny, Ian, and Mary. These students also did such things as finding all the prime numbers from 2 to 100 using calculators while the other students played games that practiced multiplication and division facts. While all students were interested in the microcomputers, only the more rapid learners spent class time developing and running programs.

The last three days of the semester were spent on testing. The PCRT and the informal mathematics attitude survey were given in one session and the Stanford Achievement Test was given in two sessions. Following are the scores for each student on the two achievement tests, along with scores from the Short Form Test of Academic Aptitude (SFTAA), a group intelligence test, as well as an indication of the number of subtests which each student scored two or more years above average on the SOI Learning Abilities Test. There are twelve subtests on the SOI. The SFTAA and SOI scores came from students' identification files for the gifted program. For two students, SOI scores were not available.

Table 2  
Semester End Achievement Scores

|              | Stanford<br>% Rank | PCRT             |         | SFTAA | G/T Areas<br>on SOI<br>Subtests |
|--------------|--------------------|------------------|---------|-------|---------------------------------|
|              |                    | Number<br>missed | % Right |       |                                 |
| School A     |                    |                  |         |       |                                 |
| Amy          |                    |                  |         |       |                                 |
| Concepts     | 96                 |                  |         |       |                                 |
| Computations | 78                 |                  |         |       |                                 |
| Applications | 98                 |                  |         |       |                                 |
| Total        | 94                 | 1                | 98      | 123   | 4                               |

Table 2 (continued)

|                  | Stanford<br>% Rank | PCRT              |         | SFTAA | G/T Areas<br>on SOI<br>Subtestab |
|------------------|--------------------|-------------------|---------|-------|----------------------------------|
|                  |                    | Number<br>misseda | % Right |       |                                  |
| <b>Jennifer</b>  |                    |                   |         |       |                                  |
| Concepts         | 94                 |                   |         |       |                                  |
| Computations     | 84                 |                   |         |       |                                  |
| Applications     | 84                 |                   |         |       |                                  |
| Total            | 92                 | 1                 | 98      | 102   | 6                                |
| <b>Priscilla</b> |                    |                   |         |       |                                  |
| Concepts         | 82                 |                   |         |       |                                  |
| Computations     | 90                 |                   |         |       |                                  |
| Applications     | 92                 |                   |         |       |                                  |
| Total            | 92                 | 3                 | 95      | 125   | 6                                |
| <b>Brent</b>     |                    |                   |         |       |                                  |
| Concepts         | 78                 |                   |         |       |                                  |
| Computations     | 82                 |                   |         |       |                                  |
| Applications     | 80                 |                   |         |       |                                  |
| Total            | 82                 | 8                 | 88      | 124   | 3                                |
| <b>Todd</b>      |                    |                   |         |       |                                  |
| Concepts         | 82                 |                   |         |       |                                  |
| Computations     | 82                 |                   |         |       |                                  |
| Applications     | 84                 |                   |         |       |                                  |
| Total            | 82                 | 7                 | 89      | 114   | 6                                |
| <b>Ken</b>       |                    |                   |         |       |                                  |
| Concepts         | 78                 |                   |         |       |                                  |
| Computations     | 78                 |                   |         |       |                                  |
| Applications     | 84                 |                   |         |       |                                  |
| Total            | 82                 | 11                | 83      | 117   | 4                                |
| <b>Troy</b>      |                    |                   |         |       |                                  |
| Concepts         | 74                 |                   |         |       |                                  |
| Computations     | 82                 |                   |         |       |                                  |
| Applications     | 70                 |                   |         |       |                                  |
| Total            | 78                 | 9                 | 86      | 118   | 9                                |
| <b>Jim</b>       |                    |                   |         |       |                                  |
| Concepts         | 94                 |                   |         |       |                                  |
| Computations     | 46                 |                   |         |       |                                  |
| Applications     | 88                 |                   |         |       |                                  |
| Total            | 76                 | 11                | 83      | 116   | 4                                |
| <b>David</b>     |                    |                   |         |       |                                  |
| Concepts         | 86                 |                   |         |       |                                  |
| Computations     | 50                 |                   |         |       |                                  |
| Applications     | 58                 |                   |         |       |                                  |
| Total            | 64                 | 12                | 81      | 110   | not<br>available                 |
| <b>School B</b>  |                    |                   |         |       |                                  |
| <b>Lewis</b>     |                    |                   |         |       |                                  |
| Concepts         | -c                 |                   |         |       |                                  |
| Computations     | 99                 |                   |         |       |                                  |
| Applications     | -c                 |                   |         |       |                                  |
| Total            | 99                 | 1                 | 98      | 141   | 5                                |
| <b>Margaret</b>  |                    |                   |         |       |                                  |
| Concepts         | 96                 |                   |         |       |                                  |
| Computations     | 98                 |                   |         |       |                                  |
| Applications     | 92                 |                   |         |       |                                  |
| Total            | 98                 | 1                 | 98      | 129   | not<br>available                 |



Table 2 (continued)

|              | Stanford<br>% Rank | PCRT              |         | SFTAA | G/T Areas<br>on 901<br>Subtestab |
|--------------|--------------------|-------------------|---------|-------|----------------------------------|
|              |                    | Number<br>misseds | % Right |       |                                  |
| <b>Danny</b> |                    |                   |         |       |                                  |
| Concepts     | 98                 |                   |         |       |                                  |
| Computations | 86                 |                   |         |       |                                  |
| Applications | 98                 |                   |         |       |                                  |
| Total        | 98                 | 2                 | 97      | 105   | 4                                |
| <b>Mark</b>  |                    |                   |         |       |                                  |
| Concepts     | 78                 |                   |         |       |                                  |
| Computations | 90                 |                   |         |       |                                  |
| Applications | 88                 |                   |         |       |                                  |
| Total        | 89                 | 4                 | 94      | 126   | 4                                |
| <b>Ian</b>   |                    |                   |         |       |                                  |
| Concepts     | 89                 |                   |         |       |                                  |
| Computations | 74                 |                   |         |       |                                  |
| Applications | 80                 |                   |         |       |                                  |
| Total        | 82                 | 5                 | 92      | 123   | 8                                |
| <b>Joy</b>   |                    |                   |         |       |                                  |
| Concepts     | 86                 |                   |         |       |                                  |
| Computations | 78                 |                   |         |       |                                  |
| Applications | 82                 |                   |         |       |                                  |
| Total        | 82                 | 3                 | 95      | 126   | 5                                |
| <b>Mary</b>  |                    |                   |         |       |                                  |
| Concepts     | 70                 |                   |         |       |                                  |
| Computations | 86                 |                   |         |       |                                  |
| Applications | 62                 |                   |         |       |                                  |
| Total        | 77                 | 3                 | 95      | 118   | 4                                |
| <b>Kevin</b> |                    |                   |         |       |                                  |
| Concepts     | 70                 |                   |         |       |                                  |
| Computations | 78                 |                   |         |       |                                  |
| Applications | 76                 |                   |         |       |                                  |
| Total        | 77                 | 5                 | 92      | 104   | 5                                |

a Of 64 items.

b Of 12 subtests.

c These scores represent a level of achievement above that for which this test was normed.

These measures indicated that using the SALT system enabled students to complete the standard fourth grade curriculum in mathematics in one semester while also engaging in various enrichment activities. Students expressed generally positive attitudes about themselves as learners of mathematics, and they expressed positive attitudes about learning mathematics using SALT.

### Conclusions

This study began with four research questions, about which the following was concluded:

1. What are the differences among gifted children in response to SALT? Most gifted children learn mathematics at an accelerated rate while also doing enrichment activities using the SALT system. Some academically gifted students are uncomfortable in SALT classes and prefer the familiar structure of traditional classrooms; these are

students who are low on two specific characteristics: flexible thinking and openness to intuitive experiences. Students who enjoy creative activities learn mathematics at an accelerated rate and have more positive attitudes toward mathematics using the SALT method.

2. Would the SALT method accelerate learning in gifted students? Use of the SALT method does indeed accelerate learning in these students.

3. Can large amounts of material be successfully presented to gifted students using the SALT method without sacrificing achievement? Larger amounts of material can be presented to gifted students using the SALT system and still allow these students to maintain a high level of achievement.

4. How appropriate is SALT for use with elementary age gifted children? The elements of SALT combine to make it an effective system for both enriching and accelerating the regular curriculum for gifted students.

### **Recommendations for Research**

These recommendations are based upon studies in the fields of gifted education and mathematics education, related theoretical literature, and the findings of this study. There is a need for further empirical research:

1. To determine the effectiveness of SALT in both enriching and accelerating gifted students in mathematics compared with other methods of teaching gifted students.

2. To determine the effectiveness of SALT in increasing the creativity of gifted students.

3. To determine the effectiveness of SALT in increasing the creativity of teachers.

4. To determine the application of SALT as a method for teaching gifted students in other content areas, such as social studies and science.

5. On the extent to which increasing teacher expectancy for success affects the attitudes and achievement of gifted students.

6. To determine the effectiveness of application of SALT techniques to a mathematics curriculum designed for gifted students.

7. To compare the acceleration of gifted students with that of average students when both groups are taught according to the SALT system.

8. To determine the effect on gifted students of an aesthetic learning environment with fine art and music compared with typical classrooms.

9. On the effect of activities to promote physical and mental relaxation on the learning of gifted students.

10. On the effect of activities to promote physical and mental relaxation on teacher performance.

11. To determine the effect of the ratio of the teacher active-student receptive state to the student active-teacher receptive state on student achievement and creativity.

### **Recommendations for Practice**

1. There is a need for mathematics textbooks designed for use with gifted students. There is a real possibility that if classroom teachers had materials designed specifically for gifted students in mathematics, more

of the gifted students' education would be appropriate for their needs and abilities.

2. Preservice or in-service training that increases teacher expectancy for enjoyable and successful learning and encourages the use of diverse teaching strategies should be provided.

3. Training in techniques to promote physical and mental relaxation in students should be made available to preservice and in-service teachers.

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#### **Modificando la instrucción de la matemática por alumnos talentosos con SALT.**

Los resultados de este estudio están apoyados sobre la observación de la instrucción en matemática por dos grupos de alumnos talentosos en el nivel del cuarto grado. Hay indicaciones que el método de SALT proveyó una vía por el enriquecimiento y la aceleración de tales alumnos. Estas resultados preliminares también indicaron que la mayoría de los alumnos talentosos prefirieron aprender las matemáticas con SALT sobre la vía tradicional. Los detalles de la clase son explicados y las recomendaciones para investigación y práctica son presentados.

#### **Die Veränderung des Mathematikunterrichts mit SALT für begabte Schüler**

Die Ergebnisse dieser Untersuchung stützen sich auf Beobachtung des Mathematikunterrichts für zwei Gruppen begabter Schüler im vierten Schuljahr. Es zeigt sich, daß der normale Mathematiklehrplan für solche Schüler bereichert und beschleunigt wurde. Diese Vorergebnisse weisen darauf hin, daß die meisten begabten Schüler das Lernen von Mathematik mit SALT der üblichen Methode vorziehen. Einzelheiten über die Klasse werden erläutert, und Vorschläge für Forschung und Praxis werden angeboten.

#### **Modification de l'enseignement des mathématiques pour les étudiants doués qui utilisent SALT**

Les résultats de cette étude sont basés sur les observations de l'enseignement des mathématiques à deux groupes d'étudiants doués de neuvième (grade 4). Certains indices laissent croire que la méthode SALT a été en même temps un moyen d'enrichir et d'accélérer le programme de mathématiques de ces étudiants. Ces résultats préliminaires montrent également que la plupart des étudiants doués ont préféré apprendre les mathématiques en utilisant la méthode SALT plutôt que l'approche traditionnelle. On donne des explications en détail sur la conduite de la classe, de même que des recommandations pour les recherches et la pratique.

### Inner Modeling\*

Richard Israel

#### Abstract

Where are all the personal and industrial applications for the new wave learning? Inner Modeling, mentally rehearsing future activities, is one of the first of such techniques designed to answer this question. The application of this technique is profound and is currently being used in North America, Africa and Europe.

The top performing salesman sits back and relaxes in his arm chair. His study door is locked, the lights are dimmed, and soft music plays from a tape recorder; with eyes closed, he slowly breathes in and out. He is conducting his daily ten-minute exercise in visualizing tomorrow's work and is seeing in great detail each call he will make, the total presentation and the successful outcome.

This technique, known as inner modeling or mentally rehearsing future activities, is a common characteristic of outstanding performers. The Russians call it "antromaximology"; the Americans call it optimum performance. Strangely enough, inner modeling is something we all do every day but not necessarily within a frame of reference that makes it work for us. How much of your time do you spend thinking of all the positive experiences that are going to happen to you? How much of the time do you spend dissipating your energy with negative thoughts, worrying about situations that never seem to happen, putting yourself into a stressful state rather than a state of optimal performance?

All too often we spend too much of our time with those negative thoughts which build and carry over from day to day, making it all the harder to break the negative thinking habit. Like the debit and credit of banking, if we continually live in a state of overdraft, it is extremely difficult to get back into a positive balanced lifestyle that keeps us free of stress most of the time.

We now have some clues as to why we tend to operate this way, and these come from the most recent research in the difference between how we think with the left and right hemispheres of our brains. It has been discovered that on a daily basis, we largely ignore the activity of the right sides of our brains and depend on the left sides of our brains, which for most people operate in a verbal, rational, logical and linear mode. We are busy controlling our lifestyle in this way. We have discussions with our friends, communicate through memos, discuss step-by-step procedures for carrying out projects, and consider ourselves making a contribution when we are "logical" in our planning and thinking.

However, there is another part of our minds at work, whether we realize it or not — the right side of our brains. This hemisphere is nonverbal, nonrational and analogic (i.e., seeing likenesses *between* things rather than sequences *of* things). It is this side of our brain which

\*1982 SALT Conference paper



we use to visualize what is going to happen to us. Because many of us do not use this part of our head effectively in daily problem solving, our right brain is not "trained" to be controlled and, in fact, can run away with our fantasies with no trouble at all.

Think back to the last time you were about to talk at a social function or business meeting. Chances are your palms were sweaty and your throat dry. Images were running through your mind of how you were about to make a fool of yourself. You wondered why you agreed to give this talk; you became sure that you would not be able to do it; you were sure you would lose your notes! "Nonsense," you responded to your inner self, breathing deeply to regain your composure. But those negative thoughts kept trickling back in. Sound familiar? It was that right hemisphere taking over again and seemingly going out of control. Why? Because we normally have little or no control over our right hemisphere imagining. It makes us our own worst enemies.

Inner modeling is the process of learning to direct the images in order to achieve positive outcomes. All that is required is a relaxed and receptive frame of mind. Here is what can be done to complete the step-by-step process of inner modeling.

1. Decide in your own mind what you really want. This may be as simple as the amount you want for your next pay raise, or something as complex as the direction of your life over the next decade. It is extremely important that what you decide is something that is genuinely meaningful to you, as opposed to a whim or a passing fancy, for being half-hearted at this stage can actually be self-defeating. Spend the time to think through what you want, for what you decide now is likely to happen if you follow through on the inner modeling process.

2. Step two is bringing yourself into a quiet, calm state. As discussed by Dr. Charles Stroebel, Director of Research at the Institute of Living, Hartford, CT, being in a quiet state creates readiness for personal change through processes such as inner modeling. There are many books and articles on relaxation, so we need not discuss the techniques here.

3. In this quiet state, visualize what you want to happen as vividly and detailed as you can imagine. Concentrate on the picture in your mind's eye. It is as though you are the projector, watching the movie. Focus clearly on your imagery. If your mind wanders, bring it back gently to your pictures, but do not be hard on yourself at this point. You are trying out a new skill. You need to know that it will come easily over time. Focus once again on the thoughts that are important to you, not worrying about how often you wander. That will lessen over time. Change or modify or expand the pictures in any way that feels right at the moment. You will find that the concept of your future will expand and grow in your mind's eye. It will be a most pleasurable experience and will, in fact, enlighten you as to what the future might be like. This is not to say that such an experience is clairvoyant or mystical in any way. It is just a completion of the concept that has been building in your right brain but has not been expressed in a conscious way before.

Continue to search for detail...for colours, smells, sounds, lighting, shapes...using all of your senses to appreciate every tiny detail. Each sense helps to make the inner modeling more successful.

4. In addition to unrelated thoughts, negative thoughts may occur from time to time. You need not be concerned about this, for there is a



way to deal effectively with such worries. Whenever you feel yourself moving into some negative thoughts or feelings, simply stop the film, calm yourself again. Then when you feel comfortable and positive, continue the film.

By way of example, you may be using visualization to help you prepare for an interview that is coming up. As you see yourself going into the interview, it is possible that all the stomach-churning feelings of previous interviews could come to mind, making the film go sour. Stop at this point, calm yourself, and search your memory for an exchange with someone that you fully enjoyed, one where you felt good about the give and take and had a positive, exciting experience, where you felt on top of the world. Hold onto that feeling, and then move again into the visualization. You will be over the negative feeling and into a very positive experience that will be setting the model for your future activities. This ideal or model is one which you create yourself in your mind, which is from where the term "inner modeling" is derived.

5. At this point in the visualization, it is easy to become excited about the possibilities of what will happen to you in the future; and it is just as easy to feel unworthy of having this happen to you, if you let your right brain run its course based on what others have told you about yourself. We tend to carry around a great deal of guilt about not deserving the good life. It seems to be part of our heritage to put ourselves down just when things start going well. So it is useful at this point to realize that each of us deserves the best that life can provide. You are, in fact, the best, "whatever you are!" Finish your period of visualization by saying whatever words are meaningful to you which will help you accept yourself as having value. An example might be, "I have, and I deserve the best for myself and my family," or, "It is okay to obtain a better life." Give yourself permission to seek and find the things you have visualized.

A repetition of this inner modeling on a regular basis will keep you focused on your goal. It will provide you a context for making decisions. Everything you do will begin to be within the context of your goals which have been visualized. This makes it easier to make decisions, for they will have more meaning as they begin to relate to a specific visualized focus.

Over time the images you create will begin to happen in real life, not because there is any magic or special rite involved, but because you are tapping into a part of your mind that you seldom pay attention to, the right side of your brain. It has been calculated that many people only use ten percent of their brain's capacity. In part this is true because most people tend to utilize their left brains and ignore the other side of their thinking capacities. By opening up the right hemisphere with some regularity, you tap into a much greater usage, providing for greater performance capability.

Many people tell us that they have difficulty visualizing their goals. And it is true that some people are oriented not so much to pictures as to words or sounds or kinesthetic experiences (touch). Use all of your senses to make your inner modeling richer and more powerful. Then, to reinforce and deepen your inner modeling experience, either write out your images in great detail, speaking about them into a tape recorder, or talk them out loud to a good listener. The process of expression,

whatever the mode of communication, follows and strengthens the five steps outlined.

Through this process, if done thoroughly and regularly, the inner models become realities, whether your goal is to get a new job, improve your tennis game, find the helpmate of your dreams, master selling skills, overcome shyness, or become a top flight financier.

Applications of inner modeling are increasing. Japan Air Lines uses the process to improve interpersonal skills; Dr. Win Wenger uses his technique called solving "impossible" problems; the National Swiss ski team applies the concept to winning meets; the USSR uses autogenics in medical therapy; and Hannes Lindemann, a German, used the process to sail a canoe singlehandedly across the Atlantic.

If behaviour modeling, or the physical practice of the future was the technique of training in the 1970s, we predict that inner modeling will be the technique of the 1980s. Try it for yourself in order to optimize your performance in any area of your life.

#### **Modelando interior.**

¿Dónde están todas las aplicaciones individuales e industriales por la onda nueva del aprendizaje? El modelando interior, repitiendo mentalmente las actividades futuras, es una de las primeras de las técnicas diseñadas para contestar esta pregunta. Las aplicaciones de esta técnica son profundas, y se usan en la actualidad en Norte América, Africa y Europa.

#### **Inneres Modelliegren**

Wo sind die persönlichen und industriellen Verwendungen für das Neue-Welle-Lernen? Inneres Modellieren, d.h. geistige Übung zukünftiger Tätigkeiten, ist eine frühe Technik, die entworfen wurde, um diese Frage zu beantworten. Die Anwendungen dieser Technik sind fast unerschöpflich. Sie wird jetzt in Nordamerika, in Afrika und in Europa verwendet.

#### **Modelage interne**

Où se trouvent toutes les applications personnelles et industrielles de cette nouvelle vague d'apprentissage accéléré? Une de ces premières techniques qui répond à la question est le modelage interne et la répétition mentale des futures activités. Les applications de cette technique sont profondes et sont à présent utilisées en Amérique du Nord, en Afrique et en Europe.

## **A Closer Look at Suggestopedia and the Silent Way\***

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### **Abstract**

A research study in the teaching of French to adults compared the suggestopedic and Silent Way methods in the acquisition of language skills and the influence upon affective behavior. Four hypotheses were established. Results indicated little variance in the impact of the two methods, which are philosophically quite opposed to each other. Unexpectedly, the influence of the teacher emerged as the most significant factor.

### **Introduction**

In the *SALT Journal* 6(2), 1981, pp. 91-108, a report was published on a research project conducted at Nijmegen University (The Netherlands), entitled, "Aptitude-Treatment Interaction in Suggestopedia and the Silent Way." A comparison was made between two recently-developed approaches in foreign language teaching: suggestopedia and the Silent Way, which in many respects are opposites. In the experiment under consideration, the dependent variables were the outcomes in language proficiency and affective behavior. French was taught in twelve 10-week courses of 40 hours each to adults in continuing education. I refer to Knibbeler (1981) for more details about the differences between Suggestopedia and the Silent Way as well as about the research design and the measuring instruments used. This paper presents and discusses the results. Therefore, I will first restate the research question and then present the hypotheses which are derived from the differences between the two approaches.

### **Problem**

The question we attempted to answer was: Are the effects produced by Suggestopedia significantly different from the effects produced by the Silent Way? By effects, we mean results relating to both language skills and affective behavior. Language skills means oral proficiency (listening and speaking). With regard to speaking, we distinguish between correctness and fluency. In affective behavior, we distinguish between appreciation, motivation and self-assessment. It was decided to offer both elementary- and intermediate-level Suggestopedia and Silent Way courses. Students were assigned to the elementary courses or the intermediate courses on the basis of their scores on a completion test and an editing test. After this initial selection, the students were divided randomly over the Suggestopedia and Silent Way classes. They had no previous acquaintance with either method.

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\*This is a revised version of: Wil Knibbeler, *Silent Way en Suggestopedie nader bekeken*, *Levende Talen* 373, 1982, 488-499.

There were seven teachers, three of whom taught both a Silent Way class and a Suggestopedia class. The instructors had been trained before the courses started. During the course period, they had weekly meetings in which they discussed written reports of each lesson in order to make sure that each teacher applied the Silent Way or Suggestopedia authentically.

### Hypotheses

I shall restrict myself to the hypotheses concerning the main question. I shall not deal with the claims regarding the interdependence of the two teaching approaches and the two cognitive styles mentioned in Knibbeler (1981), because research on this aspect is still in progress. The following hypotheses are based upon the fundamental differences between Suggestopedia and the Silent Way. Basically, the Silent Way is discovery learning, and Suggestopedia is close to what is called expository teaching.

Our four hypotheses are as follows:

1. Subjects in the Suggestopedia classes will score significantly higher on the listening comprehension test than Silent Way subjects because in the Suggestopedia program there is much specific listening practice, whereas the Silent Way teacher presents very little language for oral comprehension. With respect to the listening comprehension scores, no significant differences will be found between the classes of the different teachers within the Suggestopedia group and between the classes of the different teachers within the Silent Way group.

2. Subjects in the Suggestopedia classes will score significantly lower on correctness in the speaking test than Silent Way subjects because the Suggestopedia teacher is not worried when the students make errors whereas the Silent Way teacher emphasizes correct use of the basic structures. With respect to the correctness scores, no significant differences will be found between the classes of the different teachers within the Suggestopedia group and between the classes of the different teachers within the Silent Way group.

3. Subjects in the Suggestopedia classes will score significantly higher on fluency in the speaking test than Silent Way subjects because the Suggestopedia approach emphasizes natural speech delivery rather than correct use of the language system. With respect to the fluency scores, no significant differences will be found between the classes of the different teachers within the Suggestopedia group and between the classes of the different teachers within the Silent Way group.

4. Subjects in the Suggestopedia classes will score significantly different from the Silent Way subjects on the affective behavior tests because the treatments are basically different. With respect to the affective tests scores, no significant differences will be found between the classes of the different teachers within the Suggestopedia group and between the classes of the different teachers within the Silent Way group.

### Results

Since the language tests for the elementary students are different from those for the intermediate students, we will present the results for

each level separately. As, on the other hand, the affective behavior tests are the same for both elementary and intermediate students, we will present the results of each test together in one table. The results of the listening comprehension test taken by the elementary students after course completion are presented in Table 1.

Table 1  
Data on the Elementary Listening Comprehension Test

| Method                 | Mean | Stan. Dev. |
|------------------------|------|------------|
| Silent Way (n = 27)    | 6.5  | 3.5        |
| Teacher A: (n = 9)     | 4.7  | 1.9        |
| B: (n = 8)             | 6.4  | 4.2        |
| C: (n = 10)            | 8.2  | 3.5        |
| Suggestopedia (n = 18) | 7.9  | 3.2        |
| Teacher D: (n = 9)     | 7.6  | 3.7        |
| Teacher E: (n = 3)     | 5.3  | 1.1        |
| Teacher F: (n = 6)     | 9.8  | 1.9        |

Reliability: KR-20 = .77

The listening comprehension test consisted of 25 items. Thus the maximum score possible is 25. However, as we found a mean of 9.7 per subject, we decided to eliminate the items with a degree of difficulty  $< .20$  (12 items all told). Consequently, the maximum score = 13. The t-test showed significant differences between:

Teacher A and Teacher C :  $p < .02$ ,  $t = 2.68$ ,  $df = 17$

Teacher E and Teacher F :  $p < .01$ ,  $t = 3.63$ ,  $df = 9$ .



The results of the listening comprehension test taken by the intermediate students before the course and after course completion are presented in Table 2.

Table 2  
Data on the Intermediate Listening Comprehension Test\*

|                           | Pretest |      | Posttest |      | t    | p   | df |
|---------------------------|---------|------|----------|------|------|-----|----|
|                           | Mean    | S.D. | Mean     | S.D. |      |     |    |
| Silent Way<br>(n = 25)    | 16.2    | 3.9  | 17.9     | 3.1  | .56  | .20 | 24 |
| Teacher:                  |         |      |          |      |      |     |    |
| D (n = 12)                | 16.5    | 3.3  | 18.2     | 2.5  | .29  | .78 | 11 |
| E (n = 7)                 | 17.7    | 4.7  | 18.9     | 3.6  | .97  | .37 | 6  |
| F (n = 6)                 | 14.5    | 3.7  | 16.7     | 2.8  | 1.12 | .32 | 5  |
| Suggestopedia<br>(n = 29) | 16.9    | 4.3  | 18.1     | 3.1  | .32  | .20 | 28 |
| Teacher:                  |         |      |          |      |      |     |    |
| A (n = 21)                | 17.0    | 4.0  | 17.7     | 3.2  | 1.9  | .07 | 20 |
| G (n = 8)                 | 16.8    | 4.6  | 18.5     | 3.1  | .41  | .20 | 7  |

\*Maximum score = 24, Reliability: KR-20 pretest = .75, posttest = .60.

\*The figures in this table and some subsequent tables are slightly different from those presented in Knibbeler (1981), because, later on, we corrected some minor statistical errors.

### Conclusion

Neither in the elementary group nor in the intermediate group is there a significant difference in listening comprehension between the Suggestopedia and Silent Way classes. On the other hand, there is more variance, and in some cases even a significant difference, between some classes taught by different teachers within the Silent Way group. These findings do not confirm hypothesis 1.



The results of the speaking test taken by the elementary students after course completion are presented in Table 3.

Table 3  
Data on the Elementary Speaking Test

| Method & sub-test               |             | Mean | S.D. |
|---------------------------------|-------------|------|------|
| Silent Way<br>Total             | (n = 27)    |      |      |
|                                 | correctness | 26.4 | 6.6  |
|                                 | fluency     | 29.6 | 8.5  |
| Teacher<br>A (n = 9)            | correctness | 23.8 | 5.8  |
|                                 | fluency     | 26.7 | 7.9  |
| Teacher<br>B (n = 8)            | correctness | 25.9 | 7.3  |
|                                 | fluency     | 29.0 | 10.2 |
| Teacher<br>C (n = 10)           | correctness | 29.1 | 6.2  |
|                                 | fluency     | 32.7 | 7.4  |
| <hr/>                           |             |      |      |
| Suggestopedia (n = 18)<br>Total |             |      |      |
|                                 | correctness | 26.8 | 6.4  |
|                                 | fluency     | 32.8 | 8.2  |
| Teacher<br>D (n = 9)            | correctness | 27.8 | 7.3  |
|                                 | fluency     | 32.4 | 9.1  |
| Teacher<br>E (n = 3)            | correctness | 19.7 | 2.9  |
|                                 | fluency     | 24.6 | 5.1  |
| Teacher<br>F (n = 6)            | correctness | 29.2 | 3.2  |
|                                 | fluency     | 37.3 | 4.9  |

The speaking test consisted of 21 items. For each item the range = 1 - 4. As we found a mean score ranging from 1.09 to 2.67, we decided to eliminate items with  $M < 1.50$  (7 items all told). Consequently, the sum scores range from 14-56. The t-test showed significant differences in correctness between:

Teacher A and Teacher C:  $p < .10$ ,  $t = 1.92$ ,  $df = 17$   
 Teacher D and Teacher E:  $p < .10$ ,  $t = 1.82$ ,  $df = 10$   
 Teacher E and Teacher F:  $p < .005$ ,  $t = 4.62$ ,  $df = 7$ .

The t-test showed significant differences in fluency between Teacher E and Teacher F:  $p < .01$ ,  $t = 3.59$ ,  $df = 7$ .

The results of the speaking test taken by the intermediate students before the course and after course completion are presented in Table 4.

Table 4  
Data on the Intermediate Speaking Test\*

| Method & subtests      |             | Pretest |      | Posttest |      | t    | p    | df |
|------------------------|-------------|---------|------|----------|------|------|------|----|
|                        |             | Mean    | S.D. | Mean     | S.D. |      |      |    |
| Silent Way<br>(n = 25) | correctness | 36.2    | 9.0  | 44.1     | 10.7 | 3.7  | .00  | 24 |
|                        | fluency     | 42.4    | 9.0  | 52.0     | 11.3 | 4.5  | .00  | 24 |
| Teacher<br>D (n = 12)  | correctness | 32.6    | 1.6  | 45.2     | 2.5  | 5.57 | .00  | 11 |
|                        | fluency     | 39.5    | 2.0  | 50.9     | 2.6  | 6.46 | .00  | 11 |
| Teacher<br>E (n = 7)   | correctness | 34.0    | 3.3  | 38.7     | 4.0  | 2.06 | .08  | 6  |
|                        | fluency     | 38.9    | 3.6  | 43.5     | 4.0  | 2.17 | .07  | 6  |
| Teacher<br>F (n = 6)   | correctness | 37.3    | 2.6  | 37.3     | 3.1  | 0.0  | 1.0  | 5  |
|                        | fluency     | 40.7    | 2.5  | 42.8     | 3.9  | 0.7  | .5   | 5  |
| <hr/>                  |             |         |      |          |      |      |      |    |
| Suggestopedia (n = 29) | correctness | 34.3    | 12.7 | 41.6     | 7.3  | 3.0  | .01  | 28 |
|                        | fluency     | 40.6    | 12.9 | 48.3     | 8.4  | 3.3  | .00  | 28 |
| Teacher<br>A (n = 21)  | correctness | 39.3    | 2.4  | 43.3     | 2.1  | 1.7  | .1   | 20 |
|                        | fluency     | 46.2    | 2.8  | 50.4     | 2.2  | 1.8  | .1   | 20 |
| Teacher<br>G (n = 8)   | correctness | 37.7    | 7.8  | 43.4     | 5.0  | 4.37 | .005 | 7  |
|                        | fluency     | 44.1    | 4.3  | 51.4     | 3.8  | 3.49 | .01  | 7  |

\*The range = 19-76

### Conclusion

Neither in the elementary group nor in the intermediate group is there a significant difference in scores on the speaking test between Suggestopedia and Silent Way. In the intermediate group, where the progression is calculated through an analysis of the variance between pretest and posttest, the t-test shows higher values for speaking than for listening. This means that both approaches yield better results in speaking than listening comprehension. However, we found considerable differences in the scores on the speaking test between classes taught by different teachers within the Suggestopedia group as well as within the Silent Way group. Moreover, it is remarkable that the Silent Way students showed more progression in fluency than the Suggestopedia students although the Silent Way treatment places more emphasis on reflection upon language than Suggestopedia does. In short, none of these findings confirm either Hypothesis 2 or 3.

Since our subjects were unfamiliar with the teaching approach they experienced in the experiment, it is important to know how they

appreciated it. The mean scores on the six items of the appreciation questionnaire are presented in Table 5.

Table 5  
Appreciation Ratings\*

|                                       | Silent Way |      | Suggestopedia |      |
|---------------------------------------|------------|------|---------------|------|
|                                       | Mean       | S.D. | Mean          | S.D. |
| All questions                         |            |      |               |      |
| Elementary (SW: n = 27, SU: n = 18)   | 3.5        | 0.9  | 4.4           | 0.6  |
| Intermediate (SW: n = 25, SU: n = 29) | 3.5        | 1.1  | 3.6           | 1.1  |
| Teacher                               |            |      |               |      |
| A (n = 30)                            | 3.7        | 0.8  | 3.7           | 0.9  |
| B (n = 8)                             | 3.0        | 1.0  |               |      |
| C (n = 10)                            | 3.7        | 0.9  |               |      |
| D (n = 21)                            | 3.8        | 1.2  | 4.3           | 0.5  |
| E (n = 10)                            | 3.0        | 1.4  | 4.0           | 1.0  |
| F (n = 12)                            | 3.4        | 1.0  | 4.6           | 0.5  |
| G (n = 8)                             |            |      | 3.5           | 1.1  |
| Individual questions                  |            |      |               |      |
| Elementary (SW: n = 27, SU: n = 18)   |            |      |               |      |
| Question 1:                           | 3.1        | 1.2  | 3.6           | 0.8  |
| 2:                                    | 3.6        | 0.8  | 4.4           | 0.6  |
| 3:                                    | 3.8        | 0.8  | 4.0           | 1.0  |
| 4:                                    | 2.1        | 0.8  | 4.2           | 0.6  |
| 5:                                    | 3.8        | 0.6  | 4.0           | 0.4  |
| 6:                                    | 3.5        | 0.9  | 4.4           | 0.6  |
| Intermediate (SW: n = 25, SU: n = 29) |            |      |               |      |
| Question 1:                           | 3.4        | 1.3  | 2.7           | 1.1  |
| 2:                                    | 3.9        | 1.0  | 4.1           | 0.6  |
| 3:                                    | 4.0        | 1.0  | 3.4           | 1.1  |
| 4:                                    | 2.5        | 1.0  | 3.6           | 1.2  |
| 5:                                    | 3.6        | 1.0  | 4.2           | 0.8  |
| 6:                                    | 3.6        | 1.1  | 3.6           | 1.0  |

\*Range = 1-5

The mean values on all questions are very close to the mean values on question 6. This is in accordance with what we expected, because question 6 reads: "Generally speaking, when I compare Silent Way/Suggestopedia with other teaching approaches I experienced in the past, I consider it..." The highest scores in the Silent Way questionnaire were on Question 3, which reads: "How do you like the teacher's presenting only words and having you make sentences?" The lowest scores in the Silent Way questionnaire were on Question 4, which reads: "How do you

like the teacher's not giving you direct information irrespective of whether your attempt is successful or not?" The highest scores in the Suggestopedia questionnaire were on Question 2, which reads: "How do you like the games and drama techniques?" The lowest scores in the Suggestopedia questionnaire were on Question 1, which reads: "While the teacher is reading the text, you are listening to music; what do you think of this combination?"

### Conclusion

The subjects appreciated both Suggestopedia and Silent Way highly. The elementary subjects preferred Suggestopedia. This preference is evidenced not only by the means of all questions but also by the fact that Suggestopedia scored higher than Silent Way in the classes of teachers D, E and F, who taught both a Suggestopedia class and a Silent Way class. The variance is not as big, however, as one might expect in view of the lack of similarity between the two approaches. Moreover, in both questionnaires, the subjects valued particularly those aspects highly which foster creative language use (see Question 3, Silent Way and Question 2, Suggestopedia). Finally, our inquiry has shown that the students did not like one of the most characteristic techniques of Suggestopedia, i.e., the so-called concert phase (see Question 1).

The second aspect of affective behavior we examined in this project is motivation. The question was: Do the students, after course completion, show a higher motivation to study French than before the course, and is the difference greater with students assigned to one treatment than with students assigned to the other treatment? This question is based upon two premises. First, what we are looking for is not motivational content but motivational intensity. Second, the answer is provided through a pre-post comparison. Table 6 shows the scores on the motivation questionnaire.

Table 6  
Motivation Ratings\*

|                                          | Silent Way |      |          |      | Suggestopedia |      |          |      |
|------------------------------------------|------------|------|----------|------|---------------|------|----------|------|
|                                          | pretest    |      | posttest |      | pretest       |      | posttest |      |
|                                          | Mean       | S.D. | Mean     | S.D. | Mean          | S.D. | Mean     | S.D. |
| Elementary<br>(SW: n = 27, SU: n = 18)   | 14.1       | 2.5  | 15.0     | 2.6  | 14.1          | 2.8  | 16.4     | 2.3  |
| Intermediate<br>(SW: n = 25, SU: n = 29) | 14.8       | 2.0  | 15.5     | 2.4  | 15.1          | 2.4  | 15.8     | 2.8  |
| Teacher                                  |            |      |          |      |               |      |          |      |
| A (n = 30)                               | 14.7       | 2.6  | 15.6     | 3.0  | 14.9          | 2.3  | 15.8     | 2.8  |
| B (n = 8)                                | 13.9       | 2.4  | 14.4     | 1.8  |               |      |          |      |
| C (n = 10)                               | 13.9       | 2.8  | 15.0     | 3.1  |               |      |          |      |
| D (n = 21)                               | 14.7       | 2.1  | 16.2     | 2.6  | 14.4          | 2.8  | 16.0     | 2.5  |
| E (n = 10)                               | 14.6       | 2.7  | 14.9     | 2.0  | 15.7          | 3.5  | 17.0     | 1.0  |
| F (n = 12)                               | 15.3       | 1.2  | 15.7     | 1.4  | 13.4          | 2.7  | 16.6     | 2.8  |
| G (n = 8)                                |            |      |          |      | 15.8          | 2.6  | 15.8     | 3.1  |

\*The figures show the summed scores on the 5 questions, range = 5-25.

The t-test shows a significant difference between the pretest scores and the posttest scores in the following cases:

|                                        |                               |
|----------------------------------------|-------------------------------|
| All elementary Suggestopedia students: | $p < .001, t = 4.28, df = 16$ |
| Suggestopedia Teacher D:               | $p < .05, t = 2.75, df = 6$   |
| Silent Way Teacher F:                  | $p < .01, t = 3.93, df = 6$   |
| Silent Way Teacher D:                  | $p < .01, t = 2.84, df = 11.$ |

### Conclusion

With the exception of the eight students in Teacher G's class (in which the post-class motivation is the same as the prior motivation), both Suggestopedia subjects and Silent Way subjects in each class showed a higher motivation to learn the French language after the course than before. However, the increase in motivation was larger in the Suggestopedia group than in the Silent Way group. Teacher D proved to be very successful in motivating the students both in her Suggestopedia class and in her Silent Way class.

The last point we examined in this study was self-assessment. An important factor in foreign language learning is the concept the learners have of their learning capacities. The originators of both Suggestopedia and the Silent Way claim that the students get a more positive self-concept as a result of their approach. To what extent this claim has been confirmed in our project is shown in Table 7.

Table 7  
Self-assessment Ratings\*

|                                          | Silent Way |      |          |      | Suggestopedia |      |          |      |
|------------------------------------------|------------|------|----------|------|---------------|------|----------|------|
|                                          | Pretest    |      | Posttest |      | Pretest       |      | Posttest |      |
|                                          | Mean       | S.D. | Mean     | S.D. | Mean          | S.D. | Mean     | S.D. |
| Elementary<br>(SW: n = 27, SU: n = 18)   | 25.2       | 3.6  | 26.2     | 4.8  | 26.0          | 3.6  | 28.2     | 4.4  |
| Intermediate<br>(SW: n = 25, SU: n = 29) | 29.9       | 4.9  | 30.4     | 4.8  | 29.6          | 4.8  | 29.7     | 5.7  |
| Teacher                                  |            |      |          |      |               |      |          |      |
| A (n = 30)                               | 24.2       | 1.2  | 25.5     | 3.6  | 29.7          | 4.6  | 29.0     | 4.8  |
| B (n = 8)                                | 23.8       | 3.5  | 26.3     | 4.5  |               |      |          |      |
| C (n = 10)                               | 26.8       | 4.6  | 26.6     | 6.1  |               |      |          |      |
| D (n = 21)                               | 29.8       | 4.8  | 29.3     | 5.1  | 26.7          | 3.7  | 27.9     | 4.8  |
| E (n = 10)                               | 29.3       | 6.4  | 31.6     | 4.4  | 24.0          | 0.0  | 26.0     | 0.0  |
| F (n = 12)                               | 31.0       | 3.5  | 31.8     | 4.1  | 25.3          | 3.8  | 29.2     | 4.3  |
| G (n = 8)                                |            |      |          |      | 29.5          | 5.7  | 31.8     | 7.7  |

\*The figures represent the summed scores of the 10 questions, range = 10-50.

The t-test shows a significant difference between the pretest scores and the posttest scores in the following cases:

|                                        |                              |
|----------------------------------------|------------------------------|
| All elementary Suggestopedia students: | $p < .01, t = 2.91, df = 16$ |
| Suggestopedia Teacher F:               | $p < .05, t = 2.61, df = 6$  |
| Suggestopedia Teacher G:               | $p < .10, t = 1.89, df = 7$  |
| Silent Way Teacher E:                  | $p < .10, t = 2.03, df = 6.$ |

### Conclusion

With the exception of three classes in which a slight decrease was found, the subjects have higher esteem of their learning capacities after the course than before. In this respect, the Suggestopedia treatment is more successful than the Silent Way treatment. In addition, we did not find a strong relationship between motivation and self-assessment. The product-moment correlation between the former and the latter gives the following values:

Elementary students pretest  $r = .07$ , posttest  $r = .42$ ;

Intermediate students pretest  $r = .45$ , posttest  $r = .21$ .

Everything taken into account, we can state that our findings support Hypothesis 4 only in one group and only in two dimensions.

### General Conclusion

A closer look at Suggestopedia and the Silent Way reveals some rather unexpected facts in view of the different theoretical bases of the two approaches. Notwithstanding the fact that Suggestopedia and the Silent Way are based on opposite educational theories and are implemented through quite different teaching techniques, the results we found in our two experimental groups turned out to vary little. Although Suggestopedia was shown to be more successful with respect to motivation and self-assessment in a particular group, a thorough evaluation of all our findings did not warrant a choice in favor of one approach rather than the other. On the contrary, it appears that it is the teacher who is responsible for important variations in the outcomes rather than the approach adopted. In spite of our endeavor to control this variable, we have underestimated the influence of the teacher.

If we really want to grasp the process of language learning in school, we need to focus our attention on the teacher. This factor will remain elusive unless we succeed in developing adequate instruments for describing the quantitative and qualitative aspects of the behavior of teachers. The question of which is the most effective language teaching approach will have to be replaced by: who is the most effective language teacher?

### References

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#### **Una ojeada escrutadora a sugestopedia y la senda silenciosa.**

Una investigación en el aprendizaje del francés a adultos comparó los métodos de sugestopedia y la senda silenciosa en la adquisición de la habilidad lingüística y la influencia sobre la conducta afectiva. Cuatro hipótesis fueron establecidas. Los resultados indicaron poca varianza en el impacto de los dos métodos, los cuales son filosóficamente antagónicos unos a otros. De imprevisto, la influencia del maestro emergió como el factor más significativo.

#### **Ein näherer Blick auf Suggestopädie und The Silent Way**

In einer wissenschaftlichen Untersuchung über den Französischunterricht für Erwachsene vergleicht man die Methodik der Suggestopädie und die von The Silent Way. Die Eriernung von Sprachfähigkeiten und der Einfluß auf affektives Verhalten werden hier besprochen. Vier Hypothesen wurden gegründet. Wenig Varianz im Effekt zeigten die Resultate dieser zwei voneinander sehr verschiedenen Methoden. Unerwartet war, daß der Einfluß des Lehrers als der wichtigste Faktor auftaucht.

#### **Un regard de plus près sur la suggestopédie et la méthode du silence**

Dans un travail de recherche sur l'enseignement du français aux adultes, on a comparé les méthodes suggestopédique et silencieuse en ce qui concerne l'acquisition des techniques d'une langue étrangère et l'influence sur la conduite affective. Quatre hypothèses furent établies. Les résultats ont révélé très peu de différence concernant l'effet des deux méthodes qui, d'un point de vue philosophique, se trouvent tout à fait à l'opposé l'une de l'autre. Alors qu'on ne s'y attendait pas, il en est ressorti que l'influence du professeur était le facteur le plus important.

**The Use of Music and Imagery  
To Enhance and Accelerate  
Information Retention.**

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**Abstract**

The purpose of the study was to determine if there is an effect on retention of vocabulary when music and imagery are used to accelerate learning. As background for the study, four brain functioning theories developed from recent neuroscientific research were explored: right/left cerebral dominance, triune brain theory, taxon and locale long-term memory, and holographic memory. These four theories all suggest that multiple channels of input will increase information retention, and this is reinforced by Lozanov's work. The research utilized three conditions: an experimental condition of music plus imagery, an experimental condition of music only, and a non-treatment condition. All subjects received a pretest of vocabulary words identical to the posttest and a list of the defined words to study. Subjects in the music-plus-imagery group heard Handel's Water Music, and the experimenter read the words aloud. Subjects in the music-only condition heard the same music. Control group subjects did not hear music or the words read aloud. Analysis of covariance revealed a significant difference on the immediate criterion test for the music-only condition. On the delayed criterion test, analysis of variance revealed a significant difference for each of the experimental conditions over the control group. It is suggested that brain functioning theories be incorporated into teacher education.

Recent neuroscientific findings have advanced the state of knowledge regarding brain functioning, and the findings may have significant implications for education. It appears that man's potential learning abilities are still inadequately understood. Data now confirm that language and linguistic symbols are generally associated with only one part of the brain, the left hemisphere, while music listening is generally associated with the right hemisphere. Our schools tend to focus education around the language tools associated with the left hemisphere, largely ignoring educational opportunities associated with the rest of the brain. Research indicates, however, that teaching to promote interaction of more than one area of the brain can dramatically increase rates and retention of learning (Claycomb, 1978; Grady, 1978).

During the last two decades, Georgi Lozanov has been developing a program of instruction to synthesize teaching to more than one brain area. Using music, relaxation exercises, imagery, psychodrama, and suggestion, Lozanov found that foreign language vocabulary could be learned at a rate of 1.2 words per minute while teaching 1,000 words a day with 95 percent recall the following day (Schmidt, 1980).

Vocabulary words have traditionally been taught through channels primarily associated with the left hemisphere. The present study investigates the effect of teaching new words with the aid of music listening and imagery which are generally associated with other areas of the brain.

**Related Literature**

The brain, popularly termed the triune brain (MacLean, 1973), is vertically divided into three parts: reticular formation, limbic system,

and neocortex. The neocortex is horizontally divided into two regions known as the right and left hemisphere. Based on current research findings neuroscientists have advanced four general brain function theories: the interaction of the right and left hemispheres of the neocortex, the interaction of the triune brain, locale and taxon memory, and holographic memory. In each of these theories, neuroscientists suggest the complementary interaction of more than one brain area to enhance information retention and recall.

The review of literature pertaining to this study included neuroscientific research responsible for the labeling of right and left cerebral hemispheric functions, the triune brain, taxon and locale memory systems, and holographic memory.

### **Hemispheric Specializations**

The neocortical area of the brain, divided into two distinct regions of left and right hemisphere, is connected by a communication pathway of commissural fibers called the corpus calosum. Scientists began locating cognitive functions associated with each hemisphere in the late 1800s. While most neurologists were preoccupied with the left hemisphere, Hughlings Jackson, as early as 1864, proposed right hemisphere functions based on his medical attention to patients with right hemisphere brain tumors (Bogen, 1969). During the first half of this century, research in hemispheric specializations was limited to patients who had brain lesions, strokes, or other injuries (Bogen, 1969; Milner, 1971; Geschwind, 1970; Luria, 1966; Ettlinger, 1957). Animals were also being studied since it was possible to surgically sever the corpus calosum, leaving no connection between the two hemispheres (Spring & Deutsch, 1981).

A decisive breakthrough in this research came in 1960 when Sperry, who shared the Nobel Prize in 1981 for his pioneering research in hemispheric functions, designed an operation for humans, commissurotomy, in which the corpus calosum is severed in order to retard epileptic seizures (Sperry, 1964). As a result of Sperry's commissurotomy, the hemispheric testing formerly done on animals was extended to humans. Split-brain patients were tested extensively to verify the specializations of each hemisphere (Bogen & Gazzaniga, 1965; Gazzaniga, 1970; Levy, 1972).

Analysis of the data accumulated on split-brain patients was further substantiated with data collected from normal persons whose brains were intact. Neurologists developed the necessary devices for testing separate specializations of the intact brain, and current neuroscientific research continues to make use of these devices. For example, electroencephalography (EEGs) were used extensively to monitor alpha, beta, and theta brain wave activity (Doyle, 1974; Dumas, 1975; Galin & Ellis, 1975; Galin & Ornstein, 1972). Beta waves were more often associated with the increased activity of the left hemisphere while alpha and theta waves were associated with a relaxation of this activity. Additional research was stimulated from the development of tachistoscopes which presented visual stimuli separately to each hemisphere (Harris, 1975; Marcel, 1974; McGlone, 1973) and from dichotic listening studies (Geffner, 1971; Ingram, 1975; Kimura, 1967; Knox, 1970; Springer & Gazzaniga, 1975) which measure the effects of auditory stimuli to each hemisphere. More recently, Zaidel (1978) appears to have

made some improvements on the tachistoscope with his Z-lens viewer which presents visual stimuli separately to each hemisphere. The future promises to define hemispheric functions even more specifically including what goes on during learning and how it occurs through the introduction of positron emission tomography display units (PETs), magnetoencephalograms (MEGs), and nuclear magnetic resonance detectors (NMRs), all of which pinpoint brain activity down to a very small number of cells (Gadian, 1982; Selden, 1981; Zimmerman, 1982). In the past, EEGs were used most extensively but diffusion, posing the biggest drawback in EEGs, may be overcome with the development of PETs, MEGs, and NMRs.

It is from the studies cited above that labeling of the hemispheric specializations emerged as summarized by Eccles (1977), a 1963 Nobel Prize recipient. It appeared for the majority of persons that the right side of the body is controlled by the left hemisphere, while the left side is controlled by the right hemisphere. Visual stimuli presented to the left visual field of each eye is recorded in the right visual cortex, and vice versa, just as sounds to each ear are processed in the opposite hemisphere. Verbal language tools are generally seated in the left hemisphere. This hemisphere, controlling the right side of the body, has become dominant in the majority of Western culture persons (Debes, 1977). The left hemisphere processes in a linear and sequential approach for problem solving, which is similar to the linear problem solving function built into computers. While the left hemisphere analyzes details and ideas, the right hemisphere visualizes the gestalt or synthesis of ideas (Eccles, 1977).

The functions which tend to be dominant in the left hemisphere and figure in the learning conditions of this study were visual word processing and auditory word processing. There were three primarily right-hemisphere functions employed by the experimental groups in this study: prosodic functions, as defined by Ross (1982), including the emotional components of speech and gestures, music listening, and picture imaging.

### **Left Hemisphere Functions**

Visual and auditory words are both processed primarily in the left hemisphere. Broca's area is responsible for speaking articulately, and Wernicke's area processes words for understanding. Kimura (1973) used dichotic listening and tachistoscopes to ascertain auditory and visual functional asymmetries of the two hemispheres in normal, right-handed people. She found left hemisphere dominance for auditory words, nonsense syllables, and backward speech as well as for visual letters and words. Puccetti (1981) reported in studies with split-brain patients, "when the word *teacup* is projected tachistoscopically on a screen, *tea* being flashed to the left and *cup* to the right of the fixation point, he cannot read off the whole word. Instead he will, if right-handed with speech in the left hemisphere, say the word was *cup* while his left hand, under control of the normally mute right hemisphere, will point to the word *tea* in an array of words that includes *cup* and *teacup*" (p. 94). Sperry (1962) surgically severed the corpus callosum in cats. With one eye masked, the cats were trained but were unable to remember with the second eye what they had learned with the first eye. The second untrained eye could be used for learning the opposite of what the first

eye had been trained to do. These findings, on both normal persons and with brain impaired circumstances, suggested that either hemisphere has the potential for learning all tasks, but that the left hemisphere is generally dominant for both visual and auditory word processing.

### **Right Hemisphere Functions**

This study utilized the generally right hemisphere specializations of prosodic functions, music listening, and picture imaging. Prosody refers to the emotional components of language including spontaneous displays of emotion, gestures during conversation, ability to comprehend the emotional components of speech, and ability to comprehend the emotional components of speech, and ability to repeat statements with emotional variation (Ross, 1982). Whereas the left hemisphere processes the articulation of speaking through Broca's area and the understanding of words as spoken by others through Wernicke's area, the right hemisphere was found to have a Broca equivalent which processes the emotion of speaking and gesturing and a Wernicke equivalent which encodes emotions in the messages of others. From the University of Texas Southwestern Medical School, Ross (1982) stated, "...Broca's area is responsible for the motor articulation but not the receptive comprehension features of language... The discovery that Wernicke's area is responsible for language comprehension complemented...Broca's initial discovery of an area responsible for articulation" (p. 8, 10). Damage to Broca's area or Wernicke's area of the left hemisphere produces a condition medically labeled "aphasia." Damage to the corresponding areas in the right hemisphere was labeled by Ross (1982) as "aprosodia." Patients with Wernicke's aphasia cannot understand articulate speech of others, while patients with damage to the corresponding site of the right hemisphere cannot understand the emotional components of others' speech. Aphasia of Broca's area (left hemisphere) affects the ability to articulate speech fluently without apparent impairment of the ability to communicate emotions. Damage to the corresponding area of the right hemisphere leaves the patient, according to Ross (1982), "able to speak fluently but without any of the gestures and prosodic variations that convey emotions and render the meaning of speech vivid" (p. 10).

Earlier studies (Blumstein & Cooper, 1974; Haggard & Parkinson, 1971) supported a general right hemisphere dominance for emotional tones and intonation patterns. Milner (1962) concluded comparisons of tonal patterns or judgments of tone quality was significantly impaired after right temporal lobectomy but that left temporal lobectomy did not produce this same loss. Ross (1982) summarized the hemispheric division of language functions as: "The left is responsible for what we say, and the right for how we say it" (p. 10).

Lozanov (1978b) gave the label "double planeness" to what is said with how it is said. He stated harmonious intonation and rhythm contribute "as a more or less unconscious feedback channel for controlling the reliability of the information. We listen not only to the words, but also to the minute changes in the expression of the face, in the intonation, in the circumstances at the time of speaking and other indirect factors" (p. 17). Lozanov (1978a) suggested using the prosodic functions of the right hemisphere along with the visual and auditory word processing functions of the left hemisphere. In pronouncing words,



he stressed the importance of vocal intonation, suggesting the use of a wide range of intonations. This facilitates processing of the word through both hemispheres simultaneously. Paivio (1975) concluded simultaneous processing of information through both hemispheres will increase long-term retention of the information.

The second hemispheric function pertinent to this study was music listening. Right hemisphere dominance was found for musical chords (Gordon, 1970), timbre (Kallman & Corballis, 1975), and melodies (Bartholomeus, 1974). Kimura (1973) reported a right hemisphere favored ratio on melodic patterns at 1.19 to 1 and on nonspeech sounds at 1.08 to 1.

Monitoring EEG patterns in subjects listening to certain selections of music, Lozanov (Ostrander & Schroeder, 1979) measured an average 6 percent increase in alpha waves accompanied by a decrease in faster frequency beta waves and no change in the slowest frequency waves, theta and delta. He also recorded a slowing of the pulse rate and drop in blood pressure suggesting a condition of relaxed alertness. Lozanov (1978a) contended body rhythms will tend to synchronize themselves to the beat of music. He suggested that the slow, steady rhythm written into some music selections by composers such as Bach, Handel or Vivaldi, may help to induce a relaxed state as heart beat and breathing patterns begin to synchronize with the steady beats, written into this music. Bordon and Schuster (1976) investigated the effect of this type of music on vocabulary retention, finding significantly higher recall in the music group over the non-music group. Schuster and Mouzan (1982) compared the effect of baroque music, Handel's "Water Music," and classical music, Rimsky-Korsakoff's "Scheherazade Suite," on vocabulary retention, recording significantly higher scores for subjects in the baroque music group.

The third primarily right hemispheric function pertinent to this study was picture imaging. Although both hemispheres share in the processing of pictures and picture recall, the right hemisphere tends to be dominant (Russell, 1979). Kimura's (1973) studies supported right hemisphere dominance for visual stereoscopic depth perception at a ratio of 1.18 to 1. Visual imagery was associated with theta brain wave patterns at the University of Colorado Medical School by Budzynski (1976) who suggested these images often resemble static photographic stills which have a vivid, live-in quality.

Paivio (1975) related imagery with enhanced information retention. He stated information can be processed through either the verbal system (left hemisphere) or the imaginal system (right hemisphere) or through both systems simultaneously. His studies supported an additive effect when both systems are used. In one study, Paivio (1975) presented words to subjects either pronouncing the word or instructing the subjects to image the word. Lozanov (1978) suggested use of imagery along with word pronunciation to enhance information retention, and Schuster (1976), designing his research on Lozanov's theories, reported significant recall of words imaged over words not imaged.

In the present study, the control group utilized the left hemisphere function of visual word processing. The experimental groups added to this the additional left hemisphere function of auditory word processing along with the right hemisphere specializations of prosodic functions, music listening, and picture imaging.



### Triune Brain

In recent years, a theory of brain functioning emerged termed the triune brain (MacLean, 1973; Holden, 1979). This theory identified three distinct evolutionary stages in the development of the human brain: the reptilian brain, the old or paleomammalian brain, and the neomammalian or neocortex brain. The reptilian brain consists of the matrix of the brain stem, the midbrain, the basal ganglia and much of the hypothalamus and reticular activating system referred to as the R-complex. The second brain, the old mammalian brain, consists of the limbic system with two nearly concentric rings, one for each hemisphere. The limbic system contains the hippocampus which triggers long-term memory storage and the pituitary gland controlling the endocrine system in which an imbalance affects moods. The limbic system surrounds the older brain, the R-complex. Surrounding the limbic system and proportionally the largest of the three brains is the neocortex, divided into two hemispheres.

According to MacLean, each of these three brains has its own special abilities and functions. Although interconnected by neuronal pathways, each brain is anatomically and neurochemically distinct from each other. The R-complex controls basic biological needs such as hunger and sex drive, which can play an important role in aggressive behavior. The limbic system controls needs which are not biological in nature such as emotions and attitudes. Malfunctions in the limbic organs can lead to sensations such as rage, fear, panic, or pleasure with these emotions not always connected to any apparent external causes. The neocortex, discussed at length above, deals more with external and environmental events. MacLean's theory, according to his interview with Holden (1979), differs from the theory of right and left hemispheric specializations in that MacLean ascribes many of the creative, emotional functions to the limbic system rather than of the right hemisphere. Music and vocal intonation can affect the emotions of the limbic system to stimulate feelings of pleasantness and happiness.

Although MacLean suspects inadequate coordination between the neocortex and the two older brains, he does suggest the neocortex can operate at its optimum only when the R-complex and limbic system are satisfied. As all three brains increase their interconnectedness, the neocortex can dominate. Short-term memory and long-term memory are functions primarily of the limbic system with long-term memory being a function of all three portions of the triune brain. Dimond (1981) concluded, "...the major learning circuit of the brain is part of the limbic system...and involves the thalamus and areas of the reticular formation. In essence, therefore, it is subcortical but it has links to the cortex, mostly to the temporal lobe by way of the mammillary bodies and the hippocampal formation, which can be regarded as the area involved in memory coding for distribution over the cortex and with retrieval from those locations" (p. 302-303).

Lozanov (1978a) suggested baroque music may help to produce a relaxed condition. According to triune brain theory, relaxation, as produced by this music, would affect the R-complex. The limbic portion of the brain is influenced by positive affective environments which Lozanov (1978b) suggested can be achieved by proper teacher training. This integration of the R-complex and limbic portions of the brain,

according to MacLean (1973), will enhance the neocortical processing of new cognitive information.

### **Taxon and Locale Memory Systems**

Long-term memory has been broken into two basic systems by neurobiologists: taxon system and locale system (O'Keefe & Nadel, 1978). At the University of Arkansas School for Medical Sciences, Hand (1982) summarized the taxon system as not being contextual, not time-referenced, but rote in nature. It is governed primarily by the principle of category inclusion. Memorization of the presidents' names in serial order would employ the taxon system. Differing from taxon, locale long-term storage, according to Hand, "is based on context. It employs time and space coordinates, multiple channels for storage and retrieval of any or all of the relationships in the specific memory. It is relatively permanent." In learning the presidents' names, the locale system is employed when additional channels of input are used such as sensory and theoretical inputs, visual representations, or imagery. Hand (1982) suggested, "Memories which rely primarily on one communication mode, the verbal, will be nearly context-free and will be stored in the taxon memory, subject to decay unless used often. By adding verbal or graphic imagery to the text, the reader can imagine, that is construct a time-space context around the verbal information in order to store it in the local memory system" (p. 96).

Lozanov (1978a, 1978b) suggested using multiple channels for teaching vocabulary words. This facilitates the information into the locale system for relatively permanent storage as opposed to the limited storage retention of the taxon system. The multiple channels used by Lozanov were music, relaxation, imagery, psychodrama and suggestion.

### **Holographic Memory**

The holographic theory of memory advanced by Pribram (Pribram & Goleman, 1979) is similar to the locale memory system as cited above. Pribram contended that all inputs are intertwined and ruled out the idea of a separate taxon memory system. He suggested that the brain operates according to the same mathematical principles as a hologram with sensory inputs creating interference patterns. Brain cells, acting as frequency analyzers, resonate to auditory wave frequencies, light wave frequencies, and other types of electrical wave frequencies from within the brain. The appropriate hologram is activated by waveforms from "situational cues" when recalling information from long-term storage (Pribram & Goldman, 1979). When a small corner of a holographic plate is cut, the entire image will appear regardless of which portion is cut. Memory can be reconstructed from the waveforms stimulated in a particular site. This stimulates the waveforms in other sites, increasing the amount of memory recall. The number of waveforms associated with the memory increases as the number of sensory inputs associated with the learning situation is increased.

Multiple channels of information input increase the number of waveforms assimilated, increasing the specificity of the interference pattern and ultimately storing portions of the memory in multiple locations. All aspects of the particular memory may be retrieved from stimulation of any storage location, just as an entire holographic image

is reconstructed from any portion of the holographic plate, according to Pribram (Pribram & Goleman, 1979).

Lozanov (1978a, 1978b) stressed multiple channel and sensory input to enhance and accelerate information retention. This multiple channel input is more than additive in nature when interference patterns are considered. For example, vocabulary words can be taught through one channel of input, such as auditory, stimulating one wave form pattern. Adding a second channel, such as visual input, stimulates a wave form pattern for the visual input as well as a wave form for the auditory input, while the brain creates a third pattern formed by the interference between the auditory and the visual wave forms. One channel of input creates one wave form pattern while two channels of input create three wave form patterns. The addition of a third channel of input, such as imagery, produces four wave form patterns with the pattern of interference between the three separate input channels creating a still more specific interference pattern than with only two input channels. Lozanov's use of multiple channels is likely to increase long-term retention by increasing the accessibility of the memory through the multiple wave form patterns formed and stored holographically.

Schuster and Mouzan (1982) studied the effect of music only as reported by Lozanov on vocabulary learning. They compared vocabulary retention scores obtained from three groups using music from Handel's "Water Music," Rimsky-Korsakoff's "Scheherazade Suite," and a no-music condition. They found the "Water Music" group scored statistically significantly higher on vocabulary retention, with the second music group scoring in the middle and the no-music group scoring lowest. The present study also compared instruments as in the work of Schuster and Mouzon. This study used Handel's "Water Music" and added an experimental condition of this music plus an imagery exercise.

The purpose of the present study was to determine if there is an effect on retention of vocabulary when music and imagery are used to accelerate learning. In order to carry out the above purposes, the following research hypotheses were formulated.

### **Hypotheses**

1. There will be a significant difference between vocabulary definition retention scores when both imagery and music are played during the learning sequence than when there is no music and no imagery during the learning sequence.
2. There will be a significant difference between vocabulary definition retention scores when music is played during the learning sequence than when no music is played.
3. There will be a significant difference between vocabulary definition retention scores when both imagery and music are played during the learning sequence than when music only is used during the learning sequence.

### **Method**

#### **Subjects**

The subjects of the study were from the Library Science Masters level classes of North Texas State University. The mean age of the

students enrolled in the Library Science classes used in the study was 33.2 years. Students admitted to the program must have a minimum of 2.75 grade point average and score at least 1000 on the graduate record exam. A total of 74 subjects divided between five classes participated in the study.

### **Design**

A quasi-experimental design (Campbell & Stanley, 1972) was employed. Subjects served in one of three treatment conditions: music plus imagery, music only, or no treatment. All subjects received a pretest identical to the posttest and a list of the defined words to study. Subjects in the music-plus-imagery group heard Handel's "Water Music" and the experimenter read the words aloud. Subjects in the music-only condition heard the same music. No-treatment subjects did not hear music or the words read aloud.

### **Instruments**

A vocabulary list of 25 words as developed by Schuster (Schuster & Mouzan, 1982) was the pretest and the posttest. The retention quiz had the stimulus 25 words presented alphabetically on the left hand side of the page, with their definitions presented alphabetically on the right half of the page in a matching format with five distractors. Each subject received a list of vocabulary words to study. These words were all defined with the same definitions as those found on the pretest and posttest; however, the words were presented on the page in a random order and without the five distractor definitions.

### **Procedure for Collecting Data**

Subjects were given five minutes to complete the pretest matching any definitions they could. For the next three minutes, they were asked to "sit quietly without discussing the test." The two experimental groups listened to three minutes of Handel's "Water Music," being instructed to listen to the music very carefully, to close their eyes if they so desired allowing the music to help them relax. Music was not played for the control group.

Given the words correctly defined, all subjects had a total of six minutes study time before taking the posttest. The first experimental group had the six minutes broken into two periods. During the first two and one-half minutes, the experimenter read the words and definitions using a wide range of vocal intonations, and the students were given the suggestion that their eyes be closed to facilitate imagery. For the remaining three and one-half minutes, the subjects studied the list on their own. The music continued to play during the learning sequence. The second experimental group studied the words on their own for six minutes while the music continued to play. The control group studied the words without any treatment. The posttest had a three minute time limit. The posttest was again administered one week later.

### **Results**

Hypotheses 1, 2 and 3 were tested by analysis of covariance to determine if a significant difference existed between groups on the immediate posttest, and the same hypotheses were tested by analysis of variance to determine if a significant difference existed between groups on the one week delayed posttest.

Table 1  
Analysis of Covariance Immediate Vocabulary Retention Test  
by Group with Pretest Covariate

| Group | Adj. Means      | Degrees of freedom     | Sum of squares    | Mean square    | F ratio |
|-------|-----------------|------------------------|-------------------|----------------|---------|
| 1 - 2 | (18.38) (21.46) | 1 between<br>53 within | 129.34<br>1522.65 | 129.34         | 4.502*  |
| 1 - 3 | (18.38) (20.92) | 1 between<br>39 within | 65.40<br>1237.35  | 65.40<br>31.73 | 2.061   |
| 2 - 3 | (21.46) (20.92) | 1 between<br>47 within | 3.44<br>1258.68   | 3.44<br>26.78  | 0.128   |

Note: 1 = Control (n = 24); 2 = Music only (n = 32); 3 = Music and imagery (n = 18).

\*Significant at .05 level.

Table 1 shows the F value obtained in the analysis of covariance on the immediate criterion test for Hypotheses 1, 2 and 3. One-way analysis of covariance with the pretest between groups one and two, groups one and three, and groups two and three revealed a significance of  $F = 4.513$ ,  $p < .04$  for groups one and two; therefore, Hypothesis 2 is supported in terms of the immediate criterion test.

Table 2  
Analysis of Variance Delayed Vocabulary Retention Test by Group

| Group | Means           | Degrees of Freedom     | Sum of Squares    | Mean Square     | F Ratio |
|-------|-----------------|------------------------|-------------------|-----------------|---------|
| 1 - 2 | (9.13) (13.78)  | 1 between<br>54 within | 297.33<br>1386.09 | 297.33<br>25.67 | 11.584* |
| 1 - 3 | (9.13) (14.28)  | 1 between<br>40 within | 273.09<br>820.23  | 273.09<br>20.50 | 13.318* |
| 2 - 3 | (13.78) (14.28) | 1 between<br>48 within | 2.84<br>1309.06   | 2.84<br>27.27   | 0.104   |

Note: 1 = Control (n = 24); 2 = Music only (n = 32); 3 = Music plus imagery (n = 18).

\*Significant at .01 level.

Table 2 shows the F value obtained in the analysis of variance on the one week delayed criterion test for Hypotheses 1, 2 and 3. One-way analysis of variance between groups one and two and groups one and three, and groups two and three revealed a significance of  $F = 11.584$ ,  $p < .01$  for groups one and two; and a significance of  $F = 13.318$ ,  $p < .01$  for groups one and three; therefore, Hypotheses 1 and 2 are supported in terms of the delayed criterion test. The control group differed significantly from each of the experimental groups while the two experimental groups did not differ significantly from each other. It can be noted that



the mean score for group three, music-plus-imagery, was higher than that obtained by group two, music only; however, this difference did not support Hypothesis 3. Although group two, music only, obtained the highest mean score on the immediate posttest, group three, music plus imagery, obtained the highest score on the delayed criterion test.

### Discussion

This study explored the effect of baroque music and imagery on vocabulary definition retention. Analysis of covariance between groups for the immediate vocabulary retention test with a pretest covariate (see Table 1) revealed a statistically significant difference for the music-only group over the control group. On the one week delayed vocabulary test, analysis of variance for the three groups revealed a significant difference for each of the two experimental groups over the control group (see Table 2). The music-only group scored highest on the immediate vocabulary test while the music-plus-imagery group scored highest on the delayed vocabulary test; however, this difference between the two experimental groups was not great enough to be statistically significant in either testing condition. This suggests that using multiple channels of input may increase long-term retention of the words even when it appears to have little effect on the short-term retention. This is consistent with theories of brain functioning which state that added channels of input store the information into multiple locations, strengthening its effect on holographic memory (Pribram & Goldman, 1979), and creating multiple locale points for recall (O'Keefe & Nadel, 1978). These data are also consistent with the theory of the triune brain (MacLean, 1973), as the multiple channels of input used in this study were theorized to activate more than one portion of the brain vertically; and according to right/left hemispheric theory (Sperry, 1960; Bradshaw & Nettleton, 1981), the brain was activated horizontally by the conditions established in the experimental groups.

In summary, the findings of the study are listed as follows:

1. On the *immediate* vocabulary retention test, there was a *significant* difference between the experimental group of music only and the control group.
2. On the *delayed* vocabulary retention test, there was a *significant* difference between the experimental group of music only and the control group.
3. On the *delayed* vocabulary retention test, there was a *significant* difference between the experimental group of music plus imagery and the control group.

Based on the findings of this study, the following conclusions are drawn:

1. Certain baroque music appears to be a contributing factor to increasing both immediate and delayed information retention.
2. Certain baroque music plus imagery appears to increase delayed information retention.

### Implications

It should be re-emphasized that brain function theories from neuroscientific research are relatively new, having emerged in the last



decade. An implication of that fact could be that there is a need to translate these theories into educational practice. It could be further implied that these practices should be incorporated into teacher education programs. Techniques and tools for effective teaching are currently taught in such programs, and understanding brain functioning might help put together what is already known in the field into an integrated whole. For example, the literature is replete with information regarding learning styles, in which it is suggested that preferred learning styles and teaching styles are related to student performance (Dunn, 1978; Hardy, 1980; Hill, 1981). With the current neuroscientific findings, learning styles and individual differences can be further explained in terms of how the brain functions. As educators better understand brain functioning, they may begin to integrate current teaching theories and strategies into a complementary whole.

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#### El efecto de la música barroca y la imaginaria sobre la retención de vocabulario.

El meta de este estudio fue determinar si había un efecto sobre la retención de vocabulario cuando se usan la música y la imaginaria para acelerar el aprendizaje. Como un fondo para este estudio, cuatro teorías del funcionamiento del cerebro desarrolladas en recientes investigaciones neurocientíficas fueron exploradas: derecha/izquierda dominancia cerebral, la teoría del cerebro trino y uno, taxon y local memoria de largo tiempo, y la memoria holográfica. Todas estas cuatro teorías sugieren que los canales múltiples de entrada aumentarán la retención de información, y esto es reforzado por la obra de Lozanov. La investigación utilizó tres condiciones: una condición de música más imaginaria, otra de sólo música, y una condición sin tratamiento. Todo los sujetos recibieron antes una prueba con las palabras idénticas a la prueba posterior y una lista de las palabras definidas para estudiar. Los sujetos en el grupo de música más imaginaria oyeron La Música del Agua por Handel, y el experimentador leyó las palabras en voz alta. Los sujetos en la condición de sólo música oyeron la misma música. Sujetos en el grupo de control no oyeron ni música ni palabras. El análisis de covarianza reveló una diferencia significativa en la prueba inmediata por la condición sólo música. En la prueba dilatada, el análisis de varianza reveló una diferencia significativa por cada una de las condiciones experimentales sobre el grupo control. Se sugiere que las teorías del funcionamiento cerebral sean incorporadas en la educación de maestros.

### **Der Effekt von Barockmusik und Bildern auf das Behalten der Bedeutung von Vokabeln**

Die Absicht dieser Studie war festzustellen, ob es einen Effekt auf das Behalten von Vokabeln ergibt, wenn Musik und Bilder benutzt werden, um das Lernen zu beschleunigen. Als Hintergrund für dieses Experiment wurden vier Gehirnfunktionstheorien, die von der neuesten Nervenforschung entwickelt wurden, untersucht: RechtsLinksgehirn Dominanz; Die dreieinige Gehirntheorie; Taxon und lokales langfristiges Erinnerungsvermögen; und holographisches Erinnerungsvermögen. Jede dieser vier Theorien deutet an, daß der Gebrauch von mehreren Zufuhrkanälen das Behalten von Information erhöht, und dies ist von Lozanovs Arbeit unterstützt. Die Untersuchung hat drei Bedingungen: Eine experimentelle Bedingung von Musik mit Bildern; Eine experimentelle Bedingung von Musik allein; und eine Bedingung ohne Behandlung. Alle Versuchspersonen erhielten eine Vorprüfung von Vokabeln, die der Nachprüfung identisch waren, und sie erhielten auch eine Liste von definierten Wörtern zu studieren. Versuchspersonen in der Gruppe mit Musik und Bildern hörten Handels Wassermusik und die von dem Forscher vorgelesenen Wörter. Versuchspersonen in der Bedingung mit Musik allein hörten dieselbe Musik. Versuchspersonen in der Kontrollgruppe hörten weder Musik noch die Wörter. Die Kovarianzanalyse zeigte einen signifikanten Unterschied in der sofortig gegebenen Kriteriaprüfung mit Musik allein. Mit der später gegebenen Kriteriaprüfung zeigte die Varianzanalyse einen signifikanten Unterschied für jede Versuchsbedingung über die Kontrollgruppe. Dieses Resultat deutet an, daß Gehirnfunktionstheorien in die Lehrerbildung eingebaut werden sollten.

### **L'effet de la musique baroque et des images sur la définition de la mémorisation du vocabulaire**

Le but de l'étude était de déterminer si la musique et les images utilisées pour accélérer l'étude d'une langue avaient un effet sur la mémorisation du vocabulaire. Comme arrière-plan à l'étude, quatre théories du fonctionnement du cerveau développées à partir des toutes dernières recherches neuroscientifiques furent explorées: la prédominance du lobe cérébral droit/gauche; la théorie du cerveau trin; la mémoire à long terme taxon et locale; et la mémoire holographique. Ces quatre théories suggèrent toutes que diverses sources d'information augmentent la mémorisation de l'information et cette opinion est renforcée par le travail de Lozanov. L'étude a utilisé trois situations: une situation de musique expérimentale avec images; une situation de musique expérimentale seulement; et une situation de non-traitement. Tous les sujets ont obtenu un avant-test des mots de vocabulaire identiques à ceux de l'après-test et également une liste de mots bien précis à apprendre. Les sujets dans le groupe images et musique ont entendu la musique d'Eau de Händel, et la personne responsable de l'expérience a lu à haute voix les mots. Les sujets dans la situation de musique seulement ont entendu la même musique. Les sujets du groupe de contrôle n'ont ni entendu la musique ni eu les mots lus à haute voix. L'analyse de la covariante a révélé une importante différence dans le test du "critère immédiat" pour la situation de musique uniquement. Dans le test du "critère retardé," l'analyse de la variante a révélé une importante différence pour chaque situation expérimentale par rapport au groupe de contrôle. Il a été suggéré que les théories sur le fonctionnement du cerveau soient incorporées dans la formation d'un professeur.



### **Towards Greater Freedom and Happiness**

Alfred A. Barrios, Ph.D.  
237 pp., paperback, \$9.95  
Los Angeles: Self-Programmed Control Press  
1981

Reviewed by Richard Wheeler, M.D.

This very interesting book, like all self-help books, explores achieving one's potential by following the techniques put forth by the author. Dr. Barrios calls his technique "self-programmed control," referred to throughout his book as SPC. Through careful, lucid writing, the author is able to present a clear picture of his views on what constitutes happiness in most people's lives. He then presents an equally clear program for actualizing that picture.

The consciousness-expansion and human potential movements of the 1960s led to various self-control movements. One of these is SPC, which borrows from TM, biofeedback, self-hypnosis, autogenic training, and psycho-cybernetics. There are many references specifically to Maxwell Maltz's book, *Psycho-cybernetics*.

It is interesting and almost paradoxical that, while the author refers to hypnosis and auto- or self-hypnosis only briefly in passing on three or four occasions, SPC nonetheless, leans very heavily on hypnotic and auto-hypnotic techniques. Probably this is just as well, for most people have a lot of misunderstanding about hypnosis for many reasons and tend to become guarded to some degree at the usually erroneous idea of giving up personal control to an outside force. Dr. Barrios, a hypnotist, knows that when a person is in a hypnotic trance, it is one's own trance. The individual can do what he or she wishes with it, including following the hypnotist's suggestions if desired. But the author cleverly sidesteps this issue by renaming self-hypnosis, calling it self-programmed control or SPC, thereby avoiding any subliminal guarding against outside control.

The goals of the book are twofold. First, the author wants his readers to achieve greater control of their subconscious or automatic behavior by increased freedom, flexibility, and choice, not by suppression or abstinence. Then he wants people to be able to give positive direction to whatever new control they achieve in their lives. Certainly these are noble goals, and they seem within the reach of anyone who is willing to work with the techniques in this book with diligence, perseverance, and an open mind. This general enhancement of the self-image is possibly the greatest contribution of SPC to the human condition as people, using the described techniques, learn greater control over their ability to relax; to develop more positive attitudes, habits, and emotions; and to be more positive about their mental capacities.

To help people in their efforts, the "how to" sections of the book include specifics on positive attitudes toward oneself, others, mistakes,



failure, tragedies, and stresses. Sections on emotions, habits, health, mental ability, and many other possible problem areas are detailed so that one can find almost any problem at least mentioned.

The book contains some inaccuracies in physiology and in the interpretations of physiological alterations. Possibly the most glaring of these is on page 40 where the author states that hyperventilation leads to change in the oxygen level in the blood, influencing the brain for positive thoughts. This is not so. Hyperventilation increases the oxygenation of blood only a percent or two, a meaningless amount for oxygenation of body cells. What it does is blow off a lot of carbon dioxide by processes not associated with hemoglobin or oxygen, leading to respiratory alkalosis and resulting in tingling, numbness, and a feeling of euphoria and floating as one drifts toward unconsciousness. It can be dangerous. After a point, one cannot voluntarily stop hyperventilation, but needs an assistant to stop it by forcibly covering the nose and mouth until the carbon dioxide level builds back up. Otherwise, one may do permanent damage or die. But the author just asks that these respiratory alkalosis symptoms be interpreted as positive signs that one is becoming more receptive to SPC. Most persons would not push deep, rapid breathing beyond a little peripheral tingling, but a determined few might pursue it to disastrous levels.

Included with the book are three aids to achieving SPC. One is a phonograph record; however, mine was almost totally wanting in quality. It barely played on my stereo. One side is a fairly standard hypnotic relaxation induction called, "The Garden"; the other is directions on use of a pendulum and on what the author calls "the 20-10 countdown." The second device is a spiral to be placed upon the turntable of a phonograph and run at any suitable speed. It gives the illusion of the periphery constantly closing in toward the center. Within the text of the book are several methods of using both of these aids to attain SPC. The third helpful object is a simple biofeedback device. It is a postage-stamp-size black, thermosensitive strip to be held for ten seconds between the thumb and finger, then read. It goes through a range of colors as various body temperatures are attained, then cools back to black. The text explains that as one relaxes, one's circulation gets through more easily, warming the hands. Testing with the strip before and after a relaxation exercise shows that the technique is working.

The book concludes with four appendices, an extensive bibliography and an index. Appendix A details the first major applications of SPC as college courses, with statistical analysis and student self-evaluations of their progress and changes in attitudes as a result of taking the SPC course. Positive results were reported by all with spin-off dividends surfacing in such areas as decreased smoking, drinking, nail biting, drug use, TV watching, and many areas not specifically mentioned in the course material itself. Many had started to teach or wanted to begin to teach SPC techniques to friends or family.

Appendix B is primarily for psychologists. It is entitled "SPC and Skinner," and attempts to bridge behaviorism and humanism via SPC. It shades quite strongly toward humanism.

Appendix C is a revised Willoughby questionnaire for self-administration, together with instructions on how to use it and interpret the results obtained.

Appendix D is an instructor's outline for teaching SPC. The author recommends that each student have a copy of his book as well as other materials which can be ordered from the SPC Center. An order form is included in the book.

The author's credentials for writing this book are more than adequate. Dr. Barrios is a clinical psychologist who has authored or co-authored scientific papers on aspects of hypnosis particularly and also on holistic medicine, drug addiction, alcoholism, and minority and welfare problems. He has also lectured and taught in these areas. He has taught and perfected SPC over a period of years before writing the book.

*Towards Greater Freedom and Happiness* may well be one of the best of the books on self-help and self-control, in part because the program and its reasoning are presented so clearly and in such great detail. If one were going to purchase and use a self-help book, this one should be high on the list of choices.

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